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THE

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NORTHWESTERN MILLER

A Weekly Record of Current Milling Events, and Journal of the Flour and Grain Trades.

VOLUME 15. NUMBER 24. MINNEAPOLIS, MINN., FRIDAY, JUNE 15, 1883. $2.00 PER YEAR. 5 CTS. PER COPY

ADVERTISERS' DIRECTORY.

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REMEMBER

Our wish is to please you as nearas possible to your liking, so as to induce you to continue to favor us with your orders.

WILLFORD & NORTHWAY,

MILL BUILDERS AND FURNISHERS.

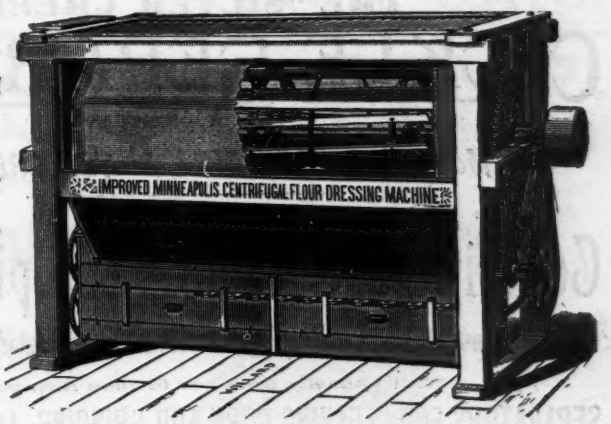
"The Deceiver lies at the Mercy of the Deceived."

PLANS

And estimates furnished for complete new Flour Mills, or for remodeling Stone Mills to the Roller Process. Agts for Allis-Gray roller mill.

Is an old Italian saying, pointed more particularly at deceivers of lovely women, and intriguers in political plots. However it holds just as good to-day in business, as it did in the old days of seething, passionate life.

We say to you that our Minneapolis Centrifugal Reel put to work on any of the various materials a centrifugal should properly handle, will make or save you very much money. TRY IT! If we deceive you, you have us at your mercy.



OLD SOCKS works it this way: He makes a Patent, and Bakers', and used to send the tailings of his reels to a pair smooth rolls, thence to a 20 ft. reel; dustings of this reel to Bakers', tailings to shorts. So he thought out a scheme to beat the Widow Miller, who was pushing him, bulling wheat, and he ordered one of Willford & Northway's number 2 Centrifugal Reels to put in place of his 20 footer. The scheme worked like a top. "Old Socks" already has $500.00 profits worked out in a two months' run, and if the cat don't "get thar" he will make it a thousand.

P. S. The Widow Miller is behind the mill (you can't see her) with a magnifying glass examining his shorts.

NONE OF OUR MACHINES WILL BE ALLOWED TO REMAIN IN USE UNLESS THEY ARE SATISFACTORY TO THE PURCHASER. In other words *their faithful performance and fine results are vouched for in every respect.* Too much time, labor and money (besides the wear and tear on our *brains, vast brains,*) have been expended on their development to allow any one of them to occupy a position where it will not do its own advertising perfectly.

Our New Improved Detacher and Separator is finding great favor among millers, orders are coming in rapidly, and every machine warranted. It is particularly profitable on rounding up and dusting flattened middlings and cleaning germ tailings from smooth rolls, and bran from last reduction. It thoroughly disintegrates the flour and middlings from germ, shorts and bran, makes a nice separation and renders fit for bakers' or straight flour the material that an ordinary reel cannot handle to any advantage. It is much cheaper than a centrifugal.

We Offer to the Millers of the Country our famous "GOLD RIBBON" brand of

Millers or millwrights changing mills over to the roller system, write us about our silk, for prices, etc. It will pay.

BODMER BOLTING CLOTH

Millers who know the value of exact count in Bolting Cloth will do well to correspond with us.

MANUFACTURED AND IMPORTED EXPRESSLY FOR OUR TRADE.

Our inspector rigidly requires the *best silk thread, great strength, full, square count, and evenness of mesh,* as we are well aware it is the only way to gain and keep the lead. The largest and best millers of the country are using our Gold Ribbon Bodmer Cloth and claim they can depend on its count when the best of other brands fail. Cloths made up with best silk twist and ticking, for 30 cents lineal foot of reel, and every cloth sent on its merits. Correspondence solicited, prices and discounts on application.

To be continued in our next.

WILLFORD & NORTHWAY, Minneapolis, Minn.

THE

STANDARD CENTRIFUGAL REEL!

THE LATEST AND BEST.

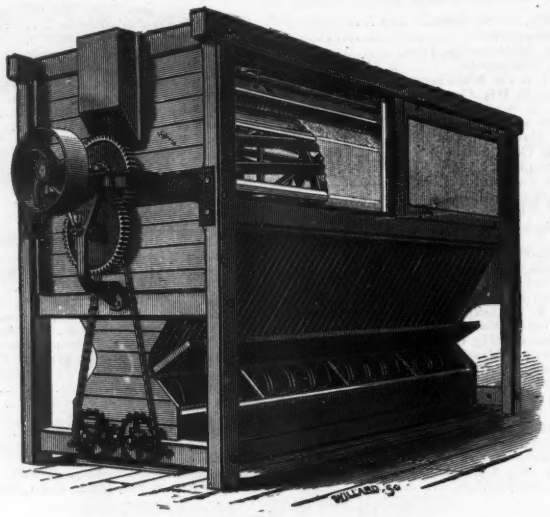
WE CLAIM

Greater capacity than any other reel of the same size.

The lightest running and easiest handled.

The best workmanship and the greatest durability.

More service from each square foot of cloth, and less wear of the cloth than any other reel whatever.



IT HAS

A 10 sided reel on which the cloth can be stretched tight and kept so, which can not be done on a round reel.

A brush attachment which sweeps each side of the reel perfectly every minute. No other polygonal reel has, or can have, this necessity. It may be used or not, as the material being treated may require.

This reel contains every feature which experience has shown to be necessary. It has the double conveyors side by side, and the material can be cut off every four inches if necessary. In case of a break in the silk this improvement allows the reel to be run until the miller has time to repair it. The brush can be regulated from the outside while the reel is in motion, to bear on the silk lightly, heavily, or not at all. The feed is automatic and air-tight, and there can be no center draft through the cylinder.

We are so confident of the correctness of our assertion that this is the best reel in the market that we will gladly ship it to any responsible party on thirty days' trial and let him be the judge as to its merits.

Office of the NORTHWESTERN MILL, Minneapolis, June 6, 1883.

Messrs. KIRK & FENDER, City.

Gentlemen:---In answering your inquiry as to how we like the Centrifugal bought of you, we have but to say that it gets "to the front" in better style than anything we have yet seen. It is giving us perfect and entire satisfaction. Yours respectfully, SIDLE, FLETCHER, HOLMES & CO.

FOR FURTHER PARTICULARS ADDRESS

KIRK & FENDER, Minneapolis.

THE "SILVER CREEK"

COCKLE SEPARATOR,

MANUFACTURED BY

McNEAL & SPAULDING, SILVER CREEK, N. Y.

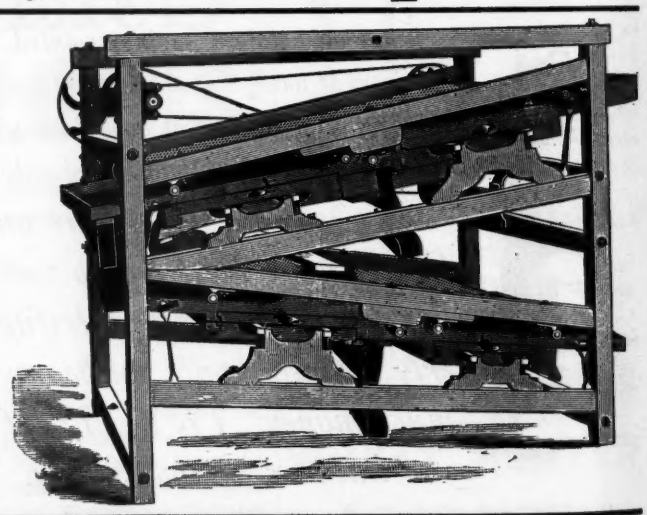
Also Manufacturers of

Centrifugal × Reels, × Scalping × Reels,

Smut Machines, Cockle Separators, Open Screen Milling Separators, Warehouse Separators,

With Capacity from 100 to 1000 Bus. per Hour.

SEPARATORS FOR CLEANING CORN FOR GRINDING, Any Capacity Required.



THE OLDEST MILLFURNISHING ESTABLISHMENT IN THE WEST

THE NORTH STAR IRON WORKS CO.

MINNEAPOLIS, MINNESOTA.

Machine Shop, Foundry, Boiler Shop

Manufacturers and Dealers in Shafting, Pulleys, Gearing, Etc.

BOLTING CLOTHS

which we import directly from the manufacturers in Switzerland, and which *we warrant egnal to any brand in the market*, cloths made up ready for the Reels in the latest improved manner, using the best of Ticking and Silk Twist. Please write for prices discounts and samples of cloth before purchasing elsewhere.

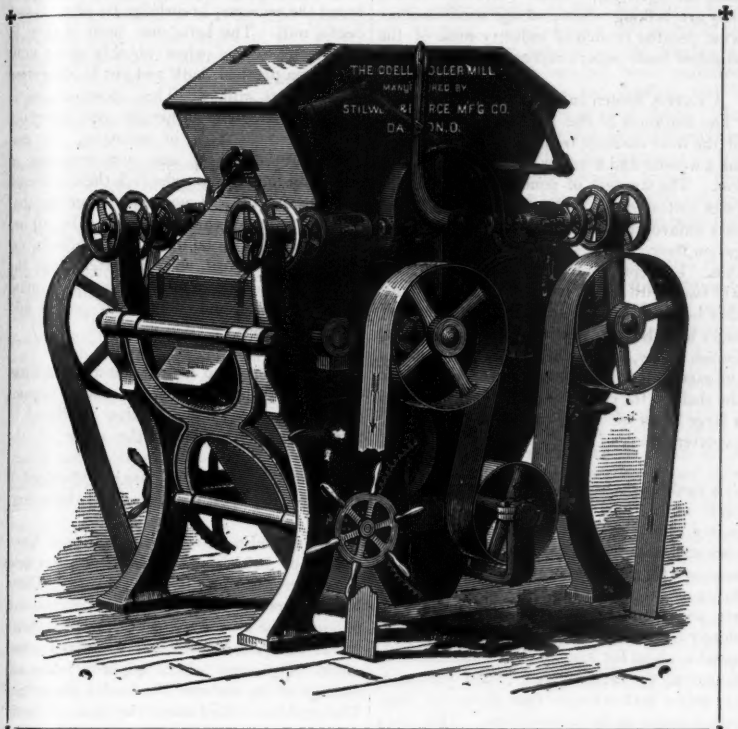
MILL BUILDERS AND FURNISHERS Plans, Specifications and Estimates furnished upon application for complete new flour mills or for remodeling old mills into new process mills. Also manufacturers of **Bolting Chests, Centrifugal Reels and Dust Catchers.**

CHILLED IRON ROLLS, SMOOTH AND CORRUGATED, A SPECIALTY. Correspondence solicited. Price lists and discounts furnished on application. Write for catalogue and pattern lists.

NORTH STAR IRON WORKS O.

ODELL'S ROLLER MILL SYSTEM

Is now in successful operation in a large number of mills, both large and small, on hard and soft wheat, and is meeting with unparalleled success. All the mills now running on this system are doing very fine and close work, and we are in receipt of the most flattering letters from millers. References and letters of introduction to parties using the Odell Rolls and System, will be furnished on application to all who desire to investigate.



Odell's Roller Mill,

Invented and Patented by **U. H. ODELL,** the builder of several of the largest and best Gradual Reduction Flour Mills in the country.

→AN ESTABLISHED SUCCESS!←

We invite particular attention to the following **Points of Superiority** possessed by the Odell Roller Mill over all competitors, all of which are broadly covered by patents, **and cannot be used on any other machine:**

1. *It is driven entirely by belts, which are so arranged as to be equivalent to giving each of the four rolls a separate driving belt from the power shaft, thus obtaining a positive differential motion which cannot be had with short belts.*

2. *It is the only Roller Mill in the market which can be instantly stopped without throwing off the driving-belt, or that has adequate tightener devices for taking up the stretch of the driving-belts.*

3. *It is the only Roller Mill in which one movement or a hand-lever spreads the rolls apart and shuts off the feed at the same time. The reverse movement of this lever brings the rolls back again exactly into working position and at the same time turns on the feed.*

4. *It is the only Roller Mill in which the movable roll-bearings may be adjusted to and from the stationary roll-bearings WITHOUT DISTURBING THE TENSION-SPRING.*

5. *Our corrugation is a decided advance over all others. It produces a more even granulation, MORE MIDDLINGS OF UNIFORM SHAPE AND SIZE, AND CLEANS THE BRAN BETTER.*

We Use None But the Best Ansonia Rolls.

Our corrugation differs from all others, and produces **Less Break Flour, and Middlings of Better Quality.**

Mill owners adopting our Roller Mills will have the benefit of Mr. Odell's advice and long experience in arranging mills. Can furnish machines on short notice. For further information, apply in person or by letter to the sole manufacturers,

STILWELL & BIERCE MFG. CO., DAYTON, OHIO.

WILCOX & SCAIFE,

Successors to Wilcox, Shinkle & Co.,

General Mill Builders and Furnishers,

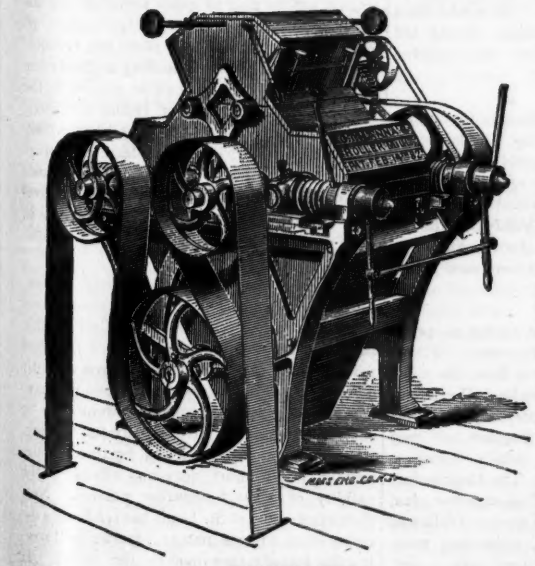
AND MANUFACTURERS OF

→C. T. Hanna Roller Mills,←

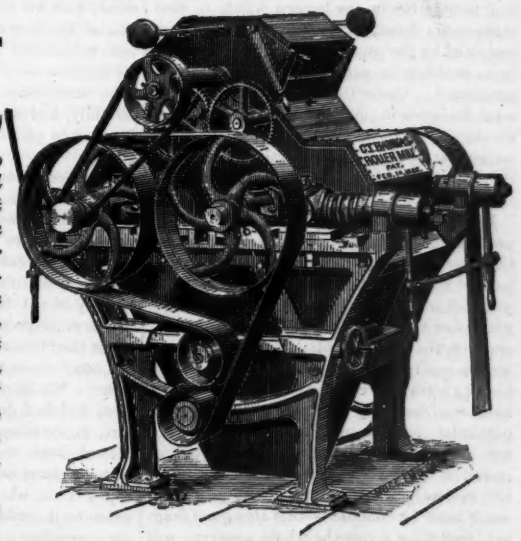
Pat. Feb. 14th, 1882. Other Patents allowed.

CORRUGATED TO SUIT EACH REDUCTION

of wheat to middlings and middlings to flour, leaving the bran broad and clean. All the horizontal adjustments are in direct line with line of contact. They are quite easily adjusted, and are positive in their action. The rolls are thrown apart by moving one lever, the reverse movement of same lever bringing them back to place of action again. They have a positive arrangement for keeping the rolls from contact with each other when running empty. Each end of roll has a separate vertical adjustment to keep them parallel with each other and in line with line of contact. They are driven by SUPERIOR belt movement, having large amount of belt surface for the amount of power to be transmitted, hence, no strain or slipping of belts. Have both positive and automatic feed.



DRIVING END.



DRIVEN END.

THEY ARE NOT SURPASSED BY ANY ROLLER MILL

Address **WILCOX & SCAIFE,**

39 Water Street, PITTSBURGH, PA.

NORTHWESTERN MILLER

PUBLISHED EVERY FRIDAY MORNING,
BY C. M. PALMER.

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MINNEAPOLIS, FRIDAY, JUNE 15, 1883.

THE first of the long series of suits pending between the Consolidated Middlings Purifier Co., of Jackson, Mich., and the Case Mfg. Co., of Columbus, Ohio, was heard, passed upon, and appealed, at the June term of the U. S. Circuit Court at Columbus, last week. The decision very closely resembles the finding of a petit jury in any action for debt, as it "split the difference" between the contestants, affirming the validity of such of the Consolidated Co.'s patents as were involved, (Geo. T. Smith's patent and certain clauses of patents 164,050 and 236,101) and declaring the Case purifier no infringement of these patents. So far as the millers are concerned the result is of little practical value; every question at issue is still as much unsettled as before the suit was brought. It is of importance, however, that the case is fairly on the road to the court of last resort, where the rights of the parties to the suit, and consequently of the purchasers of their respective machines will be fully and finally defined and determined. The action of the Consolidated Co. in pushing this suit to a hearing before Judge Baxter, whose hands are said to be gory with the blood of slaughtered patents, and who is reported to find his highest enjoyment in patent killing, has been the cause of general surprise, and is commented on in some quarters in terms the reverse of complimentary to the supposed shrewdness of the managers of that concern; but as the course chosen was voluntarily taken, evidently after due deliberation, it is possible the critics will find in the end that that astute and unscrupulous corporation knows its own nefarious business, and understands the best methods for conducting it. The NORTHWESTERN MILLER sees in this move only the natural development of the policy of the Consolidated Middlings Purifier Co., outlined in its issue of April 20th last. There is no question but that great numbers of purifiers which infringe some one or more of the patents held by that company have been sold during the several years of its apparent hibernation, and evidently its present intention is to gather in the harvest which is thus ready to its hand, provided its patents are sustained by the supreme court, as they must be to enable it to carry out the plan above mentioned. Under these circumstances they want decisions in minor courts, whether favorable or adverse, as in order to make money out of their vast collection of patents they must go to the supreme court.

* * *

IT is noticeable that two only of more than one hundred patents owned by the Consolidated Co., were placed in issue at Columbus; and we find by examining the files in other cases in which it is complainant, that but one or two patents or claims are set up in any of them, and that the same patents or claims are not used in any two cases. This manner of proceeding gives that company material for any number of actions, each one covering some particular feature of the middlings purifier. The suits are brought in every judicial circuit of the north and west, and the plaintiffs evidently believe—not without good reason it must be conceded—that this great dragnet, stretching across the whole country, will not be found entirely empty when landed. In the meantime the NORTHWESTERN MILLER renews its warning to millers to buy machines of only thoroughly responsible parties, and never to settle or pay for a doubtful machine of any kind or description without first obtaining an unquestionably good bond holding them harmless from loss or damage by suits for infringement. There is too little money in milling now for the miller to pay any bonuses to patent sharks.

* * *

THE following is the full text of the decree in the suit just decided at Columbus: "Smith took two elements and put them together, and got a patent to which he is entitled. He took the Stoll machine as a pattern and applied a suction fan to it instead of a blast fan, and added a brush to clean the under side of the cloth, and made a new machine. In this he made a great advancement; no one can invade this combination. Another may use a part. Case has made an improvement over Smith's machine. The Case cleaner is not Smith's. It is not a brush, or the equivalent of a brush, and we think Case is as far beyond Smith as Smith was beyond Stoll. There is no infringement in the Case machine. The bill is dismissed at complainant's cost." The attorneys for the Case Co., were Col. James Watson and Hon. M. D. Leggett, ex-commissioner of patents. The former did the heavy work in the case, speaking three and one-half hours on its technical points. Mr. Leggett used about half the time in delivering his argument, which was of a more general nature. The Consolidated Co. was represented by Col. Rodney Mason, its attorney, and George Harding, Esq., of Philadelphia. The latter closed the case for his side in an argument of about two hours, which is described as a strong effort. It did not seem to be strong enough for Judge Baxter, however, who rendered his decision almost before Mr. Harding resumed his seat. That gentleman gave notice of an appeal almost as quickly, and the case started on its way to the supreme court in about five minutes. May it meet with no delays in its progress toward a decision by that august tribunal. The milling public should know where it stands as soon as possible.

* * *

THE Case Co. is naturally elated by this decision. It has pluck and plenty of means, and if any concern can free itself from the arms of that gigantic devil fish, the Consolidated Co., it is the one to do it. It is to be congratulated on having lopped off part of one of the innumerable self-renewing arms with which the animal is provided, but in its victory should not forget that the battle is but just begun. We have said some hard things of the Consolidated Co., and its new policy, but they were always deserved, and the gradual pressing forward of its crowd of suits proves that we were right in our asser tions.

* * *

THE interview with Mr. Patrick Egan, of Ireland, which we publish elsewhere, will be found interesting by all American millers. Incidentally he gives his views on the Irish situation, the troubles now prevailing and their cause, with his remedy for them. This portion of the interview will interest others besides millers and is valuable as the dispassionate opinion of a well educated, fair minded man, accustomed to consider his utterances carefully, and who is, apparently, as little influenced by prejudice as any man can be.

* * *

WE have received the first number of *Grain*, the new Indianapolis paper. It is neat in style and contains some good things with promise of more in subsequent issues. The publishers, Messrs. Richards & Butler, well known millfurnishers, have the courage and honesty to put their names on their paper, which we respect. They do not call themselves the "Grain Publishing Co., capital $2,000,000," or set up their office boy as publisher. We have had something to say in the past, and shall doubtless find texts in the future, in the advertising circulars published by several firms under other names than their own, but have no fault to find with any paper which is just what it pretends to be, and shall welcome it cordially to the great field of milling journalism.

* * *

OUR arraignment of the thievish propensities of the shears of an office boy editor seems to have touched the gentle menial in a vital spot. Had we been aware of the tender and mutually admiring friendship existing between the t. s. and the o. b. aforesaid we should have included the latter in the criticism in order to avoid the appearance of partiality, though we think the shears, judged by their work, the better journalist of the two. Among other "cruel, cold, unfeeling words" applied to the inexperienced editor of the NORTHWESTERN MILLER, he is accused of occupying the position of censor of the milling press, which is manifestly a mistake. It should be spelled incenser.

* * *

WERE it not for the name, the advertisements, and the pilfering from reputable journals, the writers for which understand what they are talking about, no one would suspect what peculiar branch of industry some of the so-called trade papers represent.

* * *

A LARGE Scotch baker writes us as follows: "The flimsiness of the sacks enclosing much of the flour received from America is often to me a wonder and a cause of annoyance and loss. The strength of your jute, and in some cases cotton sacks, will not compare, except very unfavorably, with the sacks holding Hungarian flour. Your sacks are really far too thin. I except no exporting miller. They will tear with little handling, and the dust they become covered with passes through the sacks into the flour. It seems to me bad and foolish policy, and aiming at the extinction of the race for the hen to practice economy on the shell of the egg." That is how it strikes a large buyer of American flour. What do exporters think of it?

* * *

A GOOD sack never costs more than two cents more than a poor one. To save this paltry sum the American miller buys the cheapest sacks he can get, and quiets his conscience with the thought that they are as good as his neighbor uses anyway. Very likely they are, and suppose that both arrive in nasty, sloppy condition. First the shipper has to stand a claim for loss which he has difficulty in making the carrier pay. Then his goods are sold a little cheaper than those that happen to arrive in better condition. The result is loss to him and annoyance on the part of the buyer, who would prefer nice, clean, handsome packages to the dirty, broken, wasteful ones which he receives. Wouldn't it be a real bright, sharp, business-like move for one, twenty or a hundred American exporters to pay as much attention to the quality of their packages as they do to the quality of their flour. Then when they arrived at the foreign port with the market in a dull condition, with buyers scarce and shy, (such things have been known to happen, incredible as it may seem,) whose flour would go off the quickest, that which was in good shape or that which looked as if rats and 'longshoremen had held a mass convention with the sacks for a platform? Even if it brought no more, the clean packages would sell and the dirty ones would not. In the case of consignments the miller would get his money without delay. If it had been sold outright the foreign dealer would sell again without delay and feel like ordering more of the same kind.

* * *

OF course our hint contained in the above paragraph is only intended for a select few. If all American millers should act upon it, American flour would be in greater demand to the exclusion of higher priced Hungarians, and the American mills, already overtaxed, might be unable to supply the demand. Of course we do not contemplate any such injury to our constituents as that.

* * *

THE successful diagram in answer to problem No. 2 is published in this issue. "P. M. C.," the author, prefers not to have his name given in connection with it as he is head miller of one of the largest northwestern mills, and some points used in his diagram are used in the mill, the plans for which, however, were also made by himself. The diagram furnished by "Winter Wheat," an excellent plan, will be published in our next issue and followed by one or two of the others, possessing meritorious features. We have never seen a better lot of plans than those submitted in answer to our request. There is not a single one out of nearly thirty received, that would not have improved the mill, the programme of which we furnished, enough to pay for making the alterations in a six months' run. We consider it a most encouraging sign when so large a number of practical millers can be found to prepare such plans, and we venture to say that there are twenty-five millers who can do it today to one who would have attempted it three or four years ago. We trust that the NORTHWESTERN MILLER has done something towards making this marked improvement in the general knowledge of reductions and separations necessary to devise a good working programme.

* * *

IT has been the belief of a certain class of millwrights, that in that class alone was to be found the necessary knowledge to plan a successful mill. This belief has been shaken in many cases of late when notably good mills have been planned, built and put in operation by practical millers. This, however, we do not advocate. The millwright can generally devise better methods of arranging the machinery of the mill for ease and economy of operation than millers who lack the experience in doing that class of work in a large number of mills. But for the separations, the all-important point in good milling, the miller's experience in practical work is better than the theories and casual observations of any man, however sensible and practical in purely mechanical matters.

* * *

OUR readers who take an interest in these competitions should remember that criticisms are invited on any and all matter published in this paper. We require the name of the critic, as we do that of competitors for prizes, but in no case will they be used or divulged if a wish to that effect is expressed by the writer.

* * *

THE annual meeting of the National Association of British and Irish Millers was held on May 23, in the city of London. There was a large gathering of the representative millers of the two kingdoms. The secretary's report was quite lengthy and contained some useful suggestions which might be taken advantage of by our own National Association. The president talked about the rates of insurance, and thought that there should be some plan for a reduction of the insurance rates in consequence of the general change from millstones to rollers. He also recommended an interchange of ideas on the improvements made in advanced milling in the present day, because improvements are continually springing up with regard to the differents plants and their arrangement, and he hinted that if half a dozen or more of subjects could be brought forward for discussion the result would be a great benefit to the milling public. The great trouble about this is that every miller thinks that he has got the best plan of milling and very often feels selfish enough to keep it to himself. As soon as millers begin to get rid of this erroneous idea and each give the other the benefit of his experience, milling will progress faster and the present generation will be able to enjoy some of the advantages of improvements always incident to free and open discussion of plans and systems. The present advance in milling is chiefly due to the milling press, as can be proven by the fact that fifteen years ago, before a millers' paper was published, the state of milling throughout the world was at least a century behind the proud position in which it stands to-day, there having been few, if any improvements made since the days of Oliver Evans in this country, or Boulton and Watt in England.

* * *

THE conflicting decisions rendered by various United States courts on questions of patent law are productive of endless trouble both to users and manufacturers of patented machines and articles, and a reform is urgently demanded. The Washburn & Moen Co. have had for some time a practical monopoly in the manufacture of barbed wire for fencing. This monopoly was obtained by them under certain circuit court decisions affirming the validity of their foundation patents. Now the circuit court at St. Louis has rendered a decision of an adverse nature, practically throwing the manufacture open to the public. It has been appealed, of course, but it will be at least two or three years before a decision can be obtained in the supreme court, and in the meantime farmers will be buying fencing of every Tom, Dick and Harry who offers it cheaper than the Washburn & Moen combination. Should the supreme court reverse the decision, as it is likely enough it will, these purchasers

will be worried for years by claims for royalties, and the air will be filled with curses. The "patent shark" will be execrated when the courts should take the blame. If one court decides a patent valid and the owner sues an infringer in another ccurt on the strength of the first decision, and is thrown out of court by an exactly adverse decision, there is something radically wrong somewhere.

* * *

WHAT is urgently demanded to effect a reform in the patent decisions is an independent and special court devoted to hearing and passing upon such cases. The judges of this court, accustomed to hearing nothing but such cases, should be selected for their mechanical as well as their legal ability. Kept constantly familiar with the various technical industries by their avocation, they would be competent to understand and pass upon questions involving the nicest shades of difference in mechanical or chemical manipulation, and their decisions would be valuable and respected. Whoever has listened to the arguments and testimony in a complicated milling process case, for instance where the infringement depended upon the treatment of a certain grade of material at a particular step of the process, does not need to be told of the need for such a court. The feeble but earnest efforts of a judge learned in the law, but blankly ignorant of mechanics, to follow the jargon of technical testimony through the mazes of a complicated process as shown by his irrevelant questions and interruptions, will agree with us as to the necessity of such a court for the protection of the public.

* * *

A SHOCKING tragedy occurred at Vincennes, Indiana, Saturday night last, which teaches a useful moral lesson. Charles Pollock, son and assistant of Mr. Joseph Pollock, a prominent and respected miller, returned to his father's house at eleven o'clock at night, after drinking heavily all day, and without warning shot his young wife (whom he had met at the train a few hours before with every demonstration of affection), and immediately afterward himself, both dying in a few minutes. Our readers will readily grasp the useful moral lesson—which is, that whisky taken in large quantities is as bad for a miller as for anyone else.

* * *

THE latest crop statistics published by the agricultural department are not quite so favorable. There is however plenty of time for corn, while oats, barley and rye are, comparatively speaking, fancy articles, and therefore there is almost always more of them than is absolutely needed, at renumerative prices. No accurate opinion can yet be formed even by the growers themselves, and will take at least a month before there can. The department is by no means reliable, and it is asserted by those who ought to know that it is sometimes biased by speculative information. There certainly seems to be some influence working in that direction at times, as the reports appear ridiculously inaccurate to persons who have given the subject of crop growth any study. The position of wheat seems to be more clearly defined and the prospects of spring wheat are everywhere excellent, the weather so far having been very propitious, but the winter wheat is not in so good a condition, and there may be probably a loss of from 50 to 75,000,000 bushels. Despite this, the country will have a surplus of about 200,000,000 bushels for the Europeans who come to us for food supplies, and our millers are already preparing their mills by putting in new machinery in a great many places, so as to give those who seek breadstuffs from us the advantage of our very superior flour, instead of the wheat. The reason our flour market is dull now is accounted for by the fact that just at present there is no European demand and as the crop prospects over there have also improved, we need not be disappointed at the inactivity which prevails in the market just now. Russia and India promise an almost unlimited supply, and at present there seems to be no reason for apprehending very high prices for bread-stuffs the coming season.

A patent was last week issued to Lyman Smith, of Kansas City, Mo., on pneumatic automatic grain transfer apparatus.

Mill Owner Florida, of Rockford, Minn., is reported to be preparing to launch out on the matrimonial sea.

LOCAL & PERSONAL.

The situation with the milling business in this city is little different from that of a week ago, the general conditions being unsatisfactory. The week of operations on the platform will be cut down to five days, as all the mills will shut down Saturday for the millers' excursion. On Monday there were sixteen mills in operation, but one of these dropping down in the evening of that day, fifteen were left running. This number will probably be kept at work the balance of the five days. The large mill which was last week expected to go down Saturday, is yet running, but is liable to shut down most any time. The daily production for the five days will average 1,500 barrels higher than last week, or on the full week 500 barrels per day lower. The daily production for the five days will average 12,500 barrels, against 11,000 barrels last week.

The following were the receipts and shipments at and from this point for the week ending June 12, and corresponding time last year:

		Received.	Shipped.
Wheat, bus.—	1883	277,500	22,500
" "	1882	294,000	36,000
Flour, bbls.—	1883	1,175	56,665
" "	1882	1,750	28,850
LAST WEEK.			
Wheat, bus.		285,931	19,300
Flour, bbls.		2,105	53,411

Our receipts of wheat have not been quite as heavy as a week ago; neither have they come within fifteen per cent of being equal to to the amount ground by the mills. The wheat stored in Minneapolis elevators including the transfer elevator, on June 12, was 1,120,000 bus. There were about 370,000 bus. in the mills, making the total amount of wheat in store in the city, 1,490,000 bus., against 1,535,000 bus. last week. The wheat stored at St. Paul is about 314,000 bus. The wheat in store in Duluth elevators on June 11, was 661,700 bus.

* * *

The St. Anthony mill is running day-time this week.

The Cataract mill shut down Monday night, for the week, at least.

Will Milne, of Fergus Falls, is in town and will attend the excursion.

The Standard mill started up on half time Monday, running only daytime.

W. F. Gunn left for Denver, Monday night. He will be absent about ten days.

James Kratochwill, of Dayton, O., was in the city several days early in the week.

John Gluck, with Allis & Co., of Milwaukee, was in the city the first of the week.

W. D. Gray, of Milwaukee, was issued a patent on a flour dressing machine last week.

Ed. Chapman, of the Northwestern mill office, with bride, returned on Saturday.

The Humboldt mill is shut down this week, but will probably resume operations Monday.

Thos. Scott, Sr., of Port Hope, Canada, is visiting his son, Thos. Scott, of the Humboldt mill.

Capt. Shuler departed for some (to us) unknown point Tuesday to look after a mill job that his firm has taken.

The Columbia mill shut down last week Thursday, but is expected to start up again the first part of next week.

John J. Brewis, the draughtsman, is now with Chisholm Bros. & Gunn. Arthur Van Duzee has taken charge of the new shops of the same firm.

Otto Doebler, head miller of the Gardner mill at Hastings, was in the city the first of the week looking after matters pertaining to the new elevator.

The water will be shut out of the canal Saturday and Sunday to admit of its partial cleaning. This is one of the good results of the millers' excursion.

Mr. F. W. Hugo, of the Duluth elevators, was in the city and made us a call. He visited the milling district and made a trip through some of the larger mills.

Edwin Clark, of Melrose, Minn., is improving his mill and has placed an order with Willford & Northway for an Allis roller mill, a No. 2 centrifugal reel, a Eureka packer, etc.

The Pray Mfg. Co. and R. G. Shuler & Co. have ordered sample machines from the La Du King Mfg. Co. of Rochester, Minn., and have them on exhibition at their machine rooms.

Mr. Edward Kennedy, the mill pick man, received an order Monday from Assotin, Washington territory. He now has a good trade in Colorado, Idaho, Oregon and Washington territory.

The transferring apparatus for carrying flour in barrels and sacks from the Washburn C mill to the Milwaukee & St. Paul railroad warehouse, across the street, is in operation and works finely.

New York was the only poin ahead oft Minneapolis in receipts of wheat for the week ending June 2. New York receiving 791,000 bus. and Minneapolis 325,500 bus. Milwaukee came third, receiving 224,500 bus.

Mr. Dorilus Morrison, owner of the Excelsior mill and a member of the firm of E. V. White & Co., was married on the 5th inst. at Chestnutville, Mass., to Miss. A. C. Clagstone. The wedding was a very brilliant affair.

Following were the wheat receipts by grade at this point for the week ending June 12.

	Cars.		Cars
No. 1 hard	64	No. 3 regular	137
No. 2 hard	38	Rejected	21
No. 1 regular	136	Condemned	44
No. 2 regular	158		
Total			508

Samuel Potts, who has been identified with the history of the ending stone and numerous other inventions, has recently blossomed out in the real estate business, having his office in the Day block. Potts & Co. is the style of the firm.

The City mill property, at St. Paul, owned by Edward Langevin, was transferred on the 6th inst. to Henry Villard, president of the Northern Pacific railroad, for the sum of $45,000. This property lies on both sides of the railroad track near the Lafayette street crossing.

The last work on the Palisade mill—that of putting in the wheel, flume, etc., and making the connections—will probably be finished this week, and the water will be turned on and the mill set in motion next week. However, no grinding will probably be done before a week or ten days.

To the item describing the Thon & Hamm mill at St. Paul, a few facts need to be supplied. Mr. C. D. Harn superintended the millwright work, Mr. Al. Vincent is head miller and Mr. Burrell is second miller. The mill has one four-reel and one three-reel chests and a storage capacity of 10,000 bushels.

Christian Bros. & Co., owners of the Crown Roller mill, having made an exhaustive trial with one of Willford & Northway's centrifugal reels on some very difficult material to handle, were so well pleased with the quality of work and capacity that they have ordered two No. 3 machines to be placed in their mill at once.

Dave Ward returned from Austin, Minn., after putting that mill in good shape, and left Friday for Quincy, Ill., to have charge of the Mowning Bros'. mill there, which has just started up under Joe Willford's supervision. Joe reports his usual good luck—a spendid mill and excellent flour, and the "natives astonished" at the superior results.

J. M. Baird, one of the owners of the Richfield mill, south of this city, called on us last week. His firm are desirous of selling their mill for satisfactory reasons, and an advertisement to this effect will be found elsewhere. This mill is said to be good paying property, and some of our friends on the watch for an opening would do well to look the matter up.

Chas. Lemander, overseer of the roustabouts in the Zenith mill, fell from a ladder Monday night while attempting to put on a belt, and in falling had his left arm caught in a pulley and badly wrenched. It was put out of joint at the elbow, and one of the small bones was broken. Charley was around the next day, however, looking after his work, but carried his arm in a sling.

Mr. W. C. Edgar, business manager of the NORTHWESTERN MILLER, was married in St. Louis, Wednesday, 6th inst., to Miss Anne, daughter of George R. Robinson, Esq., of that city. Mr. Edgar and wife arrived in Minneapolis Monday, and are residing at 1710 Hawthorne ave. If Mr. Edgar believes in the truth of the proverb "one must marry or die to learn how many friends he has," he should feel content to dispense with the test last named.

The Dakota mill at Sauk Center, Minn., owned by Harmon, Holmes & Co., of this city, took fire Tuesday evening, and, with a large elevator, was wholly consumed. The mill was a frame structure, 60x100 feet, exclusive of engine house and boiler room, and four stories high. It was a roller mill and had a capacity of 300 barrels. Mr. Frank Holmes, one of the owners, who was in the city when the fire occurred, states that the mill and elevator and other smaller buildings connected were worth over $100,000, and estimated the insurance to be about $45,000. The elevator was comparatively empty when burned.

At the election of grain inspector, and grain weigher by the chamber of commerce on the 6th inst., C. A. Cornman, book-keeper in the office of the Barber mill was re-elected weigher, but the vote on inspector, with J. S. Crandall, formerly of Milwaukee, and Kenzie Maxfield, inspector for the Millers' Association, as candidates, resulted in a tie. Mr. Cornman received 92 votes for weigher, and Geo. H. Conant, who has been assistant weigher, 68 votes. Another election to choose an inspector was held the next day, when Mr. Maxfield was elected by a majority of 39, he receiving 137 votes and Mr. Crandall 98.

The air in grain and milling circles is full of rumors about elevotors to be built in Minneapolis. One is to the effect that the Omaha road will erect a large elevator, but nothing further than this is know about the matter Although Morse & Sammis have bought ground opposite elevator A, there is nothing definite about their building an elevator. Clark & Linton occupy a very similar position, they perhaps are holding off to see what the company which owns elevator A intends to do. The report that the Northern Pacific road will build a large elevator, is also occasionally revived and makes the rounds. We know of still another elevator enterprise, but are not yet prepared to give the facts.

The printing and press work on the NORTHWESTERN MILLER have always been a matter of solicitude, and they have been generally commended. The foreman of the press room, Mr. C. F. Hatch, has recently done some excellent work on a speciman book for the Queen City Printing Ink Co., of Cincinnati, who selected this office from among hundreds using their inks, as capable of doing the best work. The inquiries "for the same kind of ink with which the MILLER is printed" have become so numerous that Mr. Hatch has become agent for their sale, and keeps a very large stock of the Queen City Inks on hand. The fine appearance of this paper is due, in great measure to the efforts of Mr. Hatch and Mr. Henry Hahn, foreman of the composing room, than whom no better workmen or more faithful employes can be found in any office in the country.

We neglected to mention last week that at the meeting of the head millers Tuesday evening the treasurer was instructed by a unanimous vote to purchase Head Miller Williams, of the Northwestern mill, the hat which he entitled himself to by selling the most tickets for last year's excursion. A little history on this point may not be amiss and uninteresting. Several of the mills not shutting down for the excursion last year, the prospects, a few days before the event took place, for its being a success, were not as reassuring as might have been. But those having the matter in hand resolved that it should not be a failure, and went to work with a determination to make it all that had been fondly looked forward to. In canvassing the situation one evening, it was proposed that the man selling the most tickets should receive a good hat. This was agreed to, and great efforts were put forth to secure the prize. There were several strong competitors for the hat, but Mr. Williams got out early and received a big start by Capt. Holmes, of the Northwestern, taking enough tickets for the whole mill. This gave the "old gentleman" a boost that the others were not able to overcome, and when sale notes were compared he was conceded the best man. However, for some reason, he did not get the hat, and the matter had almost been forgotten. Mr. Wiliams enjoys the distinction of being the oldest head miller in the city, is universally liked, and the high standard of the Northwestern mill's flour attests his ability as a miller.

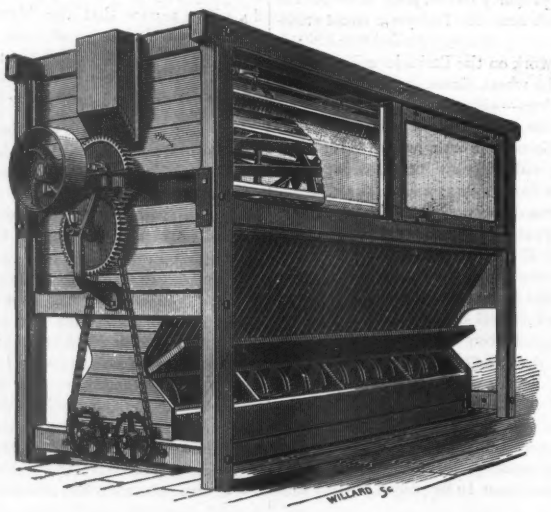
Kirk & Fender's Standard Centrifugal Reel.

The great improvements made in the centrifugal bolting reel since its introduction into this country, and the many modifications which its principles have undergone so as to adapt it to our improved methods of milling, bring it under the category of an American invention. Several of the European machines were tried here and found wanting in some of the particulars essential to good milling, so that American genius and inventive talent had to be called into requisition to make the centrifugal a perfect machine.

The "Standard," which the annexed cut illustrates, is a new and improved reel, manufactured by Kirk & Fender, of this city. This firm has been experimenting on centrifugals for a long time, and as they truthfully say that they knew that much error would creep in with a little truth, while the centrifugal was in its infancy, they made several experiments at their own expense rather than ask the milling public to do it for them.

The frame of the machine is made of the best hard wood and well finished. The bridge-tree extends clear from post to post, and is of iron, which makes it very solid. The reel is an iron frame with cast iron head and tail. On the tail end there is a device that prevents a current of air from passing through the center of the reel, so that nothing goes through the cloths but what is intended.

The head and tail ends are connected with iron ribs, and the cloth is attached on light wooden ribs fastened on at the outside. The cloth is just as easily put on as it is on any ordinary reel. There are eighteen beaters



bolted fast to four spiders, there being no chance of breakage. There is no fear of the material becoming clogged on the galley. The reel has two conveyors side by side, and there is a very ingenious arrangement for cutting off, so that if there should chance to be a hole cut in the cloth by any accident, the whole stuff would not have to be returned, but could return by just changing the slide by one cut-off, and the stuff back of that could go with the good material. The reel has a positive motion, inasmuch as it is driven with gear. There can be no chance for slipping or chance for clogging with feed. The device for keeping the meshes of the cloth open is simple and ingenious. It consists of a brush made out of soft Russian bristles, and is fixed in such a way that it brushes the entire reel three times in about two minutes. It does this by brushing one side of the cloth, then missing ten sides, and brushing the side next to the first, and so on until all the sides are brushed, which is done in twenty revolutions of the reel, when No. 1 is again reached.

The beaters run at from 175 to 200 revolutions, and the reel twenty to twenty-five in the same time.

The brush attachment is very novel in its features, easily adjusted, and can be regulated while the reel is in operation by simply turning a thumb-screw on the tail end of the machine. It can also be regulated so that the reel need only be brushed when deemed necessary, or it can be kept running all the time if desired.

Of course in damp weather, or with soft material, it is necessary to keep the brush working all the time, but its pressure on the cloth can be regulated so as to cause it to brush light or heavy as may be desired. The brush is not liable to wear out, but will last for years.

The beater is spiral, about eight inches from head to tail, thus giving the material inclination to the tail from the start. The heavier and better material goes more directly forward from the beater and passes through the fine cloth, while the lighter is passed further along by the deflecting force of the beaters, and goes through the coarser cloth or out at the tail. The reels manufactured by this firm are from six to eight feet in length, so that they have a large cloth surface, and consequently great capacity.

This centrifugal embodies some excellent features which are peculiar to itself, and besides being the latest improvement is also the most novel in its line of mill machinery. Full particulars can be had from the manufacturers, Kirk & Fender, Minneapolis, Minn.

MILLING NEWS.

J. S. Metcalf, of Indianapolis, Ind., is the patentee of grain shovel mechanism.

John Miller, of Milton, Oregon, has taken out a patent on a machine for dampening or wetting grain.

E. G. Hastings, of Nevada, Ia., and A. N. Wolf, of Allentown, Pa., are out with patents on grinding mills.

The Red Mill Co., of Will county, Ill., capital stock of $8,000, has been incorporated. Incorporators: Elisha Stevens, George Monroe, and Edward Robinson.

The wheat in sight east of the Rocky mountains in this country and in course of transportation by ocean on May 28, was 42,400,000 bus., against 32,548,000 bus. a year ago, and 34,830,000 in 1881.

Among the milling patents issued last week from the U. S. patent office, was one to Abel Mariotte, of Vereux, France, on a grist or grinding mill; Herman E. L. Bauvermeister, of Hamburg, Germany, also received a patent on a "flour sifting machine," or in plainer terms, a centrifugal reel.

The Railway Grain Transfer Co., of Chicago, with capital stock of $100,000, has filed articles of incorporation. The incorators are James W. Sykes, Horace G. Bird, Nathan A. Skinner, Alfred P. Bigelow, M. S. Chase, and Charles L. Rising. The Western Grain Dump Co., has also been organized with capital stock of $50,000. The incorporators are J. D. Leslie, N. E. Pegran, and O. A. Carpenter.

The state grain inspection bill passed the house in the Ilinois legislature on the 5th. This bill extends the state system to east St. Louis and Peoria, and was championed by Judge Messick of St. Clair, Linegar of Alexander, Cowperthwait of Christian, and Mitchell of McLean. Judge Messick, who was one of its most active and ardent supporters, feels confident that the bill will pass the senate and become a law.

A good story is told about a workman employed on a large elevator under process of construction in a New York town, illustrating how cool and collected a man can be in case of danger. The workman was standing on a scaffolding sixty feet high, when one of his companions thoughtlessly removed a stone at the foot of the structure. The whole thing gave way, and the workman was only saved from being dashed to the ground by seizing a projecting plank. While hanging suspended in the air he did not grow frantic and let go; he simply remarked to a friend below, "Jim, you'll find a ladder on the end of the wharf," and waited till the ladder was brought. Then he said he would take it as a personal favor if his fellow workman and companion would refrain from removing the foundations of the scaffolding again while he was up aloft.

BUSINESS NOTICES.

A LONG FELT WANT SUPPLIED.

The La Crosse Smooth Chilled Iron Roller Mill—price $125.00. These mills will crush tailings or size middlings for a 100 barrel mill. For particulars apply to JOHN JAMES & CO., La Crosse, Wis.

CLUB LIST.

NORTHWESTERN MILLER with

American Miller	1 year	$2.50
London Miller	"	3.00
Scientific American	"	4.50
American Agriculturist	"	3.00
Harper's Magazine	"	5.00
Century (Scribner's) Magazine	"	5.30
Boston Journal of Commerce	"	4.25
Abernathy's Hints on Millbuilding	"	4.00
Emerson's Book	"	2.50

Other publications, not on above list, can be furnished in connection with the NORTHWESTERN MILLER, at a corresponding reduction on the price charged for them separately.

STEVENS ROLLS RE-CORRUGATED.

Millers in the west and northwest, who may have Stevens rolls that require re-dressing or re-corrugating, can have such work promptly and expeditiously performed by MR. ROBT. JAMISON, NEENAH, WIS., to whom we have furnished an outfit of specially constructed machinery for this purpose.

THE JNO. T. NOYE MFG. CO.,
BUFFALO, N. Y.

ALWAYS AHEAD.

The Atlas engine works have brought out a new automatic cut-off engine of remarkable simplicity and at a very low price. There is nothing equal to it in the market for any money. The sizes run from 20 to 100 horse power, and all who intend putting in new engines for mills this season should be sure to see this before buying. We hope to have a sample soon and are ready to receive orders now.

SHATTO & DENNIS,
207 Washington Ave. North,
Minneapolis.

MILLERS' NATIONAL ASSOCIATION.

SECRETARY'S OFFICE,
MILWAUKEE, Wis., May 5, 1883.

Mr. Julius Schlesinger, Secretary Milwaukee Dust Collector Mfg. Co., Milwaukee, Wis.

Dear Sir:—Your favor of yesterday at hand, giving official notice that arrangements are concluded whereby purchasers of your machines are fully protected under all the patents of Messrs. Kirk & Fender, the Geo. T. Smith Co., and S. L. Bean, which, with the Prinz patents, cover fully all known devices of importance necessary to a successful dust collector—and I see no reason why this arrangement will not be perfectly satisfactory and acceptable to our members, as well as millers at large. I congratulate you upon this "master stroke" which enables you to furnish a successful machine that carries with it a perfect title to the purchaser. My own experience with your machine warrants a favorable expression as to its merits, and your policy to protect purchasers is worthy the consideration of other manufacturers. Yours truly,

S. H. SEAMANS, Sec'y.

BOLTING CLOTH.

Don't order your cloth until you have conferred with us. It will pay you both in point of quality and price. We are prepared with specia facilities for this work. Write us before you order. Address

CASE MFG. CO., Columbus, Ohio.
Office and factory 5th St., North of Naughten.

IMPORTANT NOTICE.

Our attention having been called to the rumor that certain parties have purchased the American interest in what is commonly known as the Ganz-Mechwart patent, for purely speculative purposes, we deem it expedient to make public what is considered to form the basis of such a movement. Claim 2, in patent 251,124, reads: "In a mill for grinding grain or other material, a pair of chilled cast iron cylinders, the surfaces of which are obliquely grooved in the same direction, in combination with mechanism for revolving both rollers at different speeds, substantially as set forth." It will, for the present, serve our purpose, as well as that of the many friends of the Stevens roller mill in its various forms, to say that as against any loss that may arise from any conflict with the above letters patent, we give an *unqualified and unconditional guarantee.*

JNO. T. NOYE MFG. CO., Buffalo, N. Y.

IMPORTANT NOTICE.

To whom it may concern:—For the more complete protection of our patrons, and to secure them beyond question against loss or annoyance from suits for infringement with which they have been threatened, we have, at a great cost to ourselves, secured a LICENSE from the GEO. T. SMITH MIDDLINGS PURIFIER CO., of Jackson, Mich., KIRK & FENDER, of Minneapolis, Minn., and SAM'L. BEAN, of Washington, D. C., licensing the "PRINZ" dust collector under all dust collector patents owned by the parties above named. The patents now controlled by our company on this class of machines cover broadly the whole process of collecting dust in flour mills, and all the most modern devices by which the process is carried out.

The license, which we shall furnish to all parties having dust collectors made by us, carries with it *absolute* security and *protection* in the use of our machines. Yours very truly,

MILWAUKEE DUST COLLECTOR MFG. CO.,
JULIUS SCHLESINGER, Sec'y.

NOTICE.

NINTH ANNUAL CONVENTION.

SECRETARY'S OFFICE,
MILWAUKEE, Wis., May 16, 1883.

The next annual meeting of the Millers' National Association will be held in the Grand Pacific hotel, Chicago, commencing Tuesday, June 26, 1883. Every member should *make it his business* to be at this meeting. Make it manifest by your presence that you appreciate an association that has saved its members more money, in *dollars and cents*, than any other organization ever formed in this country, and the "grist isn't half ground out." While there may not be as much *desperate* business on hand as usual, there are still important matters to claim your attention. Let it be a grand re-union to celebrate victories won, renew old acquaintances and make new ones. Outsiders may join by making application to the secretary and accepting the terms offered at the Cleveland convention, viz., $5 per unit capacity—membership fee, and the assessment ($10 per unit) for 1883.

ORDER OF BUSINESS.

1. Opening of the convention, 11 o'clock A. M.
2. Report of committee on credentials.
3. Proceedings of last convention.
4. Enrollment of members.
5. Official report.
6. Call of standing committees and filling vacancies.
7. Appointment of committee on nomination of officers.
8. Reports of standing committees.
9. Reports from special committees.
10. General business.
11. Reports of committee on nominations, and election of officers for the ensuing year.

S. H. SEAMANS, Secy. and Treas.

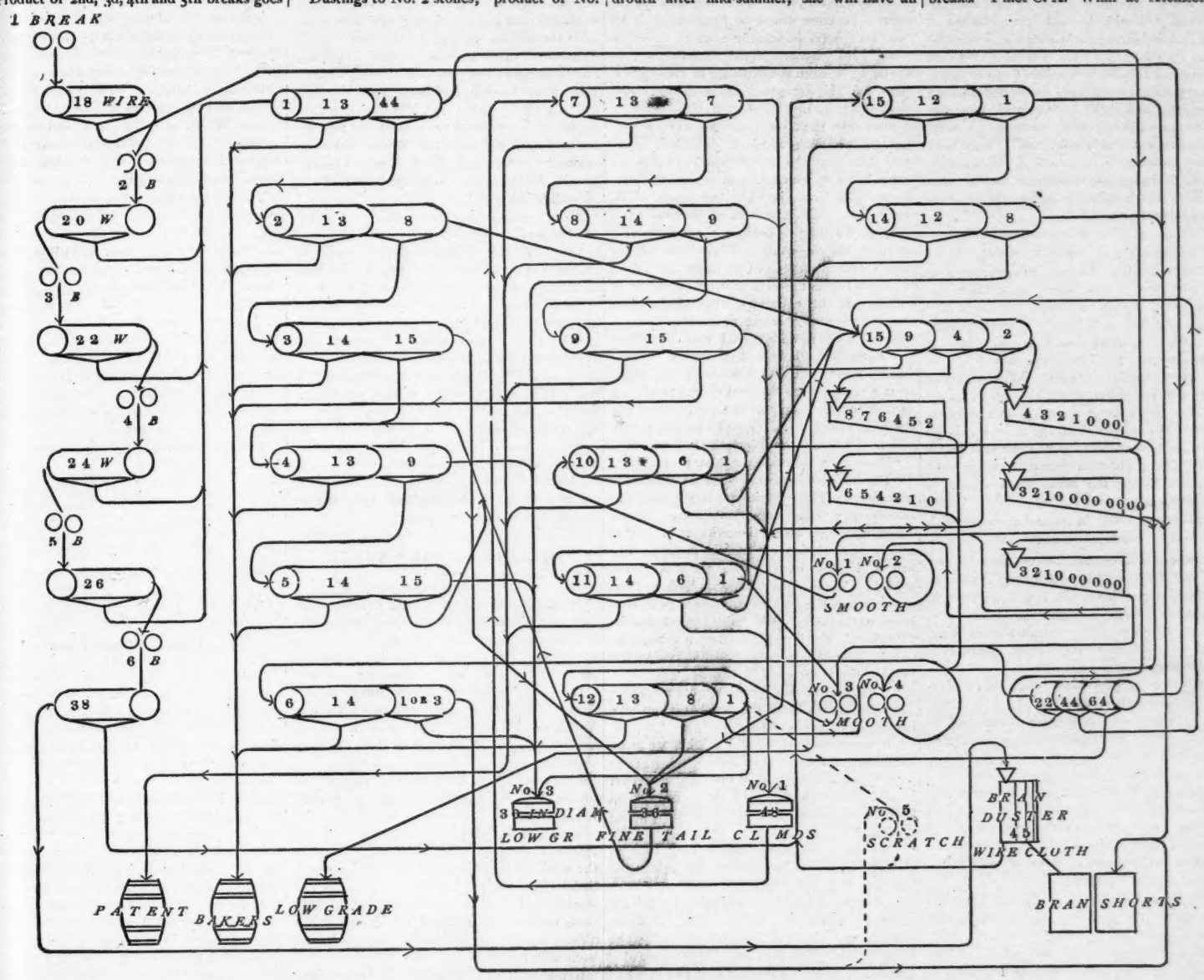
Answer to Problem II.

PRIZE ARTICLE BY "P. M. C."

Machinery in mill consists of 15 reels, 15 feet in length, and 1 reel (A) 6 feet long, besides break reels; also 5 purifiers, 3 runs of stones, 1 bran duster, 6 pairs corrugated rolls, and 4 pairs of smooth rolls. IIave also shown 1 pair of scratch rolls in dotted lines to take germ tailings before sending to low grade reels instead of grinding them on low grade stones with fine low grade stock, and said tailings are shown to run both ways. The scratch rolls can be included in extra machinery or not at option of examiners.

Product of 1st break is sent to reel A clothed with Nos. 64, 44 and 22 grits gauze, 64 going to low grade reels, 44 to middlings grader reel, 15 and 22 with coarse middlings to purifier 4, tailings to germ roll 3.

Product of 2nd, 3d, 4th and 5th breaks goes



to reel Nos. 1, 2 and 3, clothed as shown in diagram.

Product of 6th break goes to low grade reels; tail to bran duster.

Flour from reels 1, 2 and 3 goes to bakers'; tailings of No. 1 to purifier 4; tailings of No. 2 to grader No. 15; tailings of No. 3 to No. 2 stone.

Nos. 4 and 5 reels are fed from No. 2 stone. Product to bakers'; tailings to low grade stone No. 3.

No. 6 reel is fed from tailings roll No. 4. Product to bakers'; returns or cut-off to low grade stone; tailings to shorts or scratch roll. If to the shorts, No. 1 cloth should be used on tail of reel, but if to rolls, No. 3 can be used.

Reels Nos. 7, 8 and 9 are fed from clean middlings stone No. 1. Product to patent; tailings of Nos. 7 and 8 to stone No. 2 and of No. 9 to stone No. 1.

Reel No. 10 is fed from No. 1 roll (No. 1 coarse middlings).

Flour to patent; product of No. 6 cloth to No. 1 stone; product of No. 1 cloth to reel 15; tailings to germ roll No. 3.

Reel No. 11 is fed from No. 2 rolls, (No. 2 coarse middlings).

Flour to patent; product of No. 6 cloth to to stone No. 1; product of No. 1 cloth to reel 15; tailings to roll No. 3.

Reel No. 12 is fed from germ roll No. 3. Flour to bakers'; product of No. 8 cloth to No. 2 stone; product of No. 1 cloth to tailings roll No. 4; tailings to low grade stone or to scratch roll No. 5.

Reels Nos. 13 and 14 are fed from low grade stone—product of 6th break and of bran duster.

Flour to low grade; tailings to shorts; cut-off product of No. 14 to low grade stone.

Reel No. 15 (fine middlings grader) is fed from tail of reel No. 2, cut-off from Nos. 10 and 11, and product of 44 grits gauze, reel A.

Dustings to No. 2 stones; product of No. 4 to purifier 1; product of No. 2 to purifier 2; tailings to purifier 3.

Clean middlings from purifier 1 to stone No. 1; cut-off to purifier 2; tailings to roll No. 4.

Clean middlings from purifier 2 to stone No. 1; cut-off to purifier 3; tailings to roll No. 4.

Clean middlings from purifier 3 to stone No. 1; cut-off to purifier 4; tailings to roll No. 4.

Clean middlings from purifier 4 to roll No. 1; cut-off to purifier 5; tailings to roll No. 4 or to shorts.

Clean middlings from purifier 5 to roll No. 1; cut-off to roll No. 2; tailings to roll No. 3.

One of the largest dams in the world is that recently completed across the Ottawa river, about forty miles above Montreal. The rapids are two miles long, with a fall of ten feet. Where the dam is built, the river is 1,800 feet wide, with a depth ranging from two to nineteen feet, and a current of nine miles an hour.

Things in the Winter Wheat Country.

BY R. JAMES ABERNATHEY.

Since my last I have been getting over ground quite rapidly, seeing a great deal and learning but little of real value. I have satisfied myself of this fact, however, that the crop prospects for small grain, especially across the Missouri river, are good. It is true that there will not be as much wheat harvested in Kansas as there was last year owing to a smaller acreage and some winter damage, but there will from present indication be a good crop, and of good quality. The season has been backward for corn in Nebraska, and much replanting has to be done, but there is time enough to make the corn crop yet. Last year Nebraska had an exceptionally fine crop of corn, and some of it was planted as late as the 10th of June. Unless Kansas is visited by a severe drouth after mid-summer, she will have an enormous crop of corn; but of course I can tell more about that bye and bye.

In the course of my wandering, I took in the mill of Guthrie Bros., at Superior, Neb. They have an excellent and convenient water power, obtained by tapping the Republican river as it "comes round the bend" with a headrace which takes a short cut across the country to head the river off, and empties back into it again. I found the mill floor crowded with new machinery, consisting of rolls, purifiers, flour packer, etc., ready to be put in place and set going. This machinery has been there all winter awaiting the arrival of the millwright, but alas the patient waiting has been in vain. That millwright never showed up and never will. I can't quite think of his name and it don't matter much. He has done some work in this section and last summer made a contract with the Guthrie Bros., to remodel their mill. He bought the machinery and had it sent on, promising to come himself to do the work, but kept putting them off from time to time until finally he "flew the track" entirely, going back on his contract. Of course he is irresponsible and Guthrie Bros., can make good no claim against him for damages, which they would seem fairly entitled to. They are now negotiating with other parties to do the job.

I did not go to Maryville to see our friend Perry Hutchinson, but learned he was able to run in the day time only. Too much mill, evidently, for his trade. Atchison is coming to the front as a milling center. Cain, Hanthorne & Co., are getting ready to erect a 200 barrel combined roller and stone mill. The Richmond City Mill Works are likely to get the contract, though the matter of who will do it is not fairly settled yet. Bowman & Kellogg, and Blair and Auld are still happy and serene, running night and day with their old stone mill, seemingly unmindful of the fact that such things as roller mills exist. The Diamond mill has been changing over, adding rolls for breaks. I met C. A. Winn at Atchison, en route for St. Joe, to oversee the starting of the new mill there, which expects to go about the middle of the month (June). He was on his way from Aullville, Missouri, where he had just closed a contract with J. H. Barnes, John W. Brown, and G. W. Roberts for a 100 barrel, all roller mill, to be built at once. Evidently Nordyke & Marmon Co., do not intend to be left in the matter of roller mill building.

A Salem, Ore., correspondent says that mill B, of that city, recently built by the Salem Mill Co., is now in full operation and is turning out a very superior quality of flour. Being, as it is, provided with all the modern machinery and improvements, it to-day stands as the finest and most complete flouring mill on the northwest coast.

The Iowa Trunk Line Association has reduced the freight on wheat from 37½@35½ cents; on corn, rye, oats and barley from 32½@30½ cents for carrying from Omaha and Council Bluffs to Detroit and Toledo.

Mr. Egan Interviewed.

Mr. Egan, the extensive miller, flour merchant, and baker of the Irish metropolis, and well-known as treasurer of the land league, whose portrait appears at the head of this column, called at the office of the NORTHWESTERN MILLER last week, and at our request gave his views on milling topics to our stenographer substantially, as follows:

"You are extensively engaged in the milling and flour business in Ireland. We would like to get your views on the difference between milling in Ireland and this country."

"I am a director in a milling concern, the largest of its kind in Ireland. It is known as "The Dublin North City Milling Co., Limited." There are thirty-four runs of stone. We use porcelain and chilled iron rollers for middlings, but very soon we will have the rollers working at the other end. We have several American improvements in our mills, such as purifiers, separators, and cockle machines. I have been visiting some of the best mills in Milwaukee, Buffalo, and here, and am amazed at the perfection to which milling has been carried out in this country."

"Do you mill much Irish wheat, and how does it compare with American wheat?"

"The Irish wheat does not as a general thing reach the cities. It is picked up by the country millers. It does not reach Dublin to any extent, or if it does, it is only in small quantities. We mill spring wheat of the class of Milwaukee No. 2. The Minnesota wheat is the favorite wheat in Dublin. We also mill a large quantity of wheat from the southern states. We also get a large quantity of California wheat. The people in all the cities and large towns use bakers' bread, which we make with barm. The California wheat is made into household flour, the bread from which is principally raised with baking powders."

"How does milling in Ireland compare with what you have seen in this country?"

"I cannot answer that better than to say that we are constantly adopting American machines and methods, but I will say that in Ireland we are half a century in advance of English milling. They admit this in England, and generally pay Irish millers the highest wages."

"Have you any complete roller mills in Ireland, such as you see here?"

"Yes, there is a complete roller mill in Newry, giving very satisfactory results; also one in Belfast."

"What do you think of the proposed tariffs to be put on American flour in France and Germany?"

"They will try to do that as they are very jealous of all foreign manufactures, but the people will buy the best there is when they need it, despite the tariff."

"What is your opinion of the cry that has been raised in England about American diseased cattle?"

"That is all a subterfuge. We have in Ireland great hopes that the importation of American cattle will bring about a reduction in the value of live stock, and compel the graziers to break more of the land and put it into tillage, so that the agricultural laborer will have a chance to make a living. During the past thirty years nearly all the good land in Ireland has been cleared of tillage and turned into a huge cattle tract, and the agricultural laborer has been pauperized on his own land and made a burthen on his friends in America, and the trades and professions ruined. It is about time that the people of this country should get tired of having the money leave here to pay rents to English landlords who own land in Ireland."

"Do you ship flour from Ireland to any European country?"

"A little of inferiors to England sometimes. We bake the highest class in Ireland, and make the best bread in the world in Dublin, but it takes us all we can do to compete with American flour. A great many of the inland mills are shut down in consequence of American importation, and unless a mill is well situated as to transportation, it can't compete at all. The large importation of American flour gives the people some advantage in the consequent reduction of prices."

"It has been very frequently asserted that Ireland is very favorably situated as a manufacturing nation. That her water power is immense, and that there is an abundant supply of coal if it was only taken out of the ground. If such are the facts, why don't English capital seek these advantages?"

"Now you have hit it. The reason is not far to seek. The land of Ireland teems with natural resources, but there is an enormous drain from the country in absentee rent and interest. The country has been drained of its wealth and there is little spare capital. The absentee rents amount to nearly thirty millions of dollars annually. The landlords are a most improvident class, deeply in debt, and the interest on the various mortgages would amount to probably $20,000,000. Then the taxation for imperial purposes would be $30,000,000. All that and more, leaves the country never to come back again. The country is constantly agitated in consequence of these grievances, and this prevents English capital from going to Ireland. Then again the sheriff is appointed by the crown, and he has the appointment of the grand jury, or rather, he selects them from the landed gentry, as they are called, who, of course, are interested in themselves. The grand jury has the power of assessing for public improvement, such as road-making, building of bridges, the construction of public buildings, etc. They have all the county appointments. The objection to all these grievances has kept outside capital from coming into the country. The tillage lands are all held under yearly tenancies, and are terminable at the end of each year. If a tenant improves his land and increases its productive power, the rent is certain to be raised, so as a consequence the land is only producing enough to barely support the people and pay the enormous rents, dragged from the producers by the non-producing class, the landlords."

"How many bakeries are there in Dublin?"

"The business is conducted differently there from here. The bakeries are larger, and as a consequence they turn out better bread. There are about fifteen bakeries in Dublin to supply a population of 500,000 people. The firm of Egan & Rourke bake about 600 sacks a week. We like the Minneapolis flour best, as it gives us the greatest number of pounds of bread to the sack. We bake a good deal of "Pillsbury's Best" and "Washburn's Superlative." The Minneapolis flour is taking the place of the Hungarian in Ireland."

"What are the chief points of difference?"

"There is very little difference. They have nearly the same characteristics."

"It seems that baking and milling are more combined in Europe than here."

"Yes, more especially in Germany, where it is no uncommon thing to see a bakery and mill united under one owner and one superintendent."

"Mr. Egan you have been a long time in France; have you ever visited the celebrated Darblay mills at Corbeil?"

"I have paid very little attention to private business while in France, but I know something of the reputation of the flour. Mr. Darblay has been regarded as one of the greatest millers in Europe. He was among the first to replace the mode of bolting in use in a great part of France in 1825, by silk dressing machines. He was the first in France who successfully adopted the millstone exhaust, and he was the author of several improvements in grain cleaning machinery. Mr. Darblay died some time in 1878."

"Vienna flour is said to have a very white color; is that so? Is it whiter than the French or the flour you have seen in Minneapolis?"

"To the inexperienced eye each grade of flour appears white when examined by itself, but when several samples are place side by side, and then either smoothed over or tested by Pekàr's method, they will seem to differ from each other in color, more especially if placed on a blue paper. The shades can be seen through a large magnifying glass, and will appear due in some measure to minute particles of bran still adhering to small grits. Sometimes the color is due to the interior of the grain, and may be caused by the wheat being deteriorated in storage, etc."

"You remarked that Ireland was fifty years ahead of England in milling."

"We are the nearest to America, and the most progressive in Europe. American ideas reach us before any other part of Europe. Even the fight we have with the landlords is somewhat due to American notions. And very soon the English and Scotch will take up the cry and the landlord class will be compelled to surrender."

"It was inferred from your speech that there was a large number of Irishmen residing in England. How do they get on in that country?"

"First rate. So long as they can enjoy the same laws as the English, they get along well, and that is another argument in our favor. See how well they get along here. Of course the position of the Irish in England is a peculiar one. Surrounded by a population nearly altogether hostile in sentiment of every kind, political and social, they resemble somewhat the chosen people in the land of the Pharoahs. Their eyes are fastened on Ireland, and their hopes and efforts are for her deliverance from English legislative control. It is not a little singular that even amongst the people of England their earnest and enthusiastic efforts for Fatherland should find some sympathy. Amongst the few who have espoused their cause are some clergymen of the established church."

"Don't the Irish own Ireland? Are not the landlords Irish?"

"No. A few hundred people own the 20,800,000 acres there, and they are not Irish by race or any long line of descent, except in a few instances. They are simply an English garrison in Ireland."

"Do you propose making American improvements when you reach Ireland?"

"I am fairly delighted with this country, and I have large schemes on hand for the removal of my countrymen from large cities to the lands out here. I am giving that some attention now. I shall go through the mills, though, and will stop over here on my way back from California, and then I'll be able to tell you more. I am delighted with Minneapolis, and will visit it again."

MILLING AT MILWAUKEE.

[SPECIAL CORRESPONDENCE.]

Milling here is in the same unsatisfactory state that has characterized it some time back. The demand which was looked for has not yet arrived, and probably will not until the present large stocks are reduced considerably. Our foreign friends are not inclined to purchase stocks even at the low figures they can be offered at, and until their present stock is lower we do not think they will be anxious about the future. Receipts of wheat here the past week have been larger than any time on the crop, ranging from 55,000 to 100,000 bus. per day, and the stock in store is increased considerably. This has caused the market to decline from two to three cents on the week, as the shipments have been small. Special No. 3 wheat is almost a drug on the market and can be purchased fully fifteen cents per bus. under No. 2. Although this is all it is worth, the decline in this grade has been fully ten cents per bus. We await with interest what the outcome of the present depression in milling will be, but think that matters will right themselves soon, as millers cannot afford to sell at prices at which present stocks are being disposed of.

The following shows the daily production for the week:

Operated by	Mill.	Bbls.
J. B. A. Kern & Son	Eagle	500
L. R. Hurd, (Manager)	Daisy	300
F. H. Magdeburg & Co.	Gem	200
Schlessinger & Daggett	Northwestern	500
Stern & Wohlrab	Jupiter	200
Total daily production		1,700

The balance of our mills are either closed for repairs or on account of the general depression.

The city trade is taking a little of the surplus stock of flour on hand, but only buy in small lots. Best patents are quotable at $7.25 and bakers' at $5.75 per barrel. Bulk bran is salable at $11, and sacked at $12.75. Bulk middlings $12; sacked $14.75.

* * *

Receipts and shipments of flour for week ending June 9th and other periods: Receipts 61,070 bbls.; shipments, 61,978 bbls. Corresponding time last year: Receipts, 69,038 bbls; shipments, 69,096 bbls. Total barrels since January 1st: Receipts 1,363,884 bbls; shipments, 1,615,611. Corresponding time last year: Receipts, 1,363,029 bbls; shipments, 1,738,763 bbls.

WHEAT RECEIPTS—BUSHELS.

Week ending June 9	388,210
Corresponding time last year	108,175
Total bus. since Jan. 1, 1883	3,278,056
Corresponding time last year	3,069,369

SHIPMENTS—BUSHELS.

Week ending June 9	82,827
Corresponding time last year	49,693
Total bus. since Jan. 1, 1883	426,812
" " same time last year	615,945

* * *

R. T. Underhill, of Rowland & Co., New York city, passed through the city to-day. He reports the crop in Ohio, Indiana, and Illinois as damaged worse than estimated.

Jas. Osborne, of Jas. Osborne & Co., flour commission merchants, Glasgow, spent part of the week here forming connections for the future. He left here for Minneapolis.

Durant & Paine, of the City mill, have dissolved, and the business will be continued by Cassius M. Paine. Rye flour will be manufactured exclusively on the roller system. Mr. Durant is undecided what he will do, but thinks some of going west.

The Northwestern Marine elevator, No. 2, owned by C. Manegold, Jr. & C. J. Kershaw, burst its sides Wednesday afternoon, and 115,000 bushels of No. 2 wheat spread out in each direction, about 2,000 bushels going into the river. As all our elevators are well filled 92,000 bushels of it was loaded on the steam barge C. J. Kershaw, and the schooners Typo and M. L. Collins. The balance is being stored in other elevators. The elevator is a complete wreck, and was valued at $15,000. The wheat was all insured. It was rumored that several tramps were buried beneath the wheat, but such is not the case.

Eastern freight rates remain steady as follows:

All rail to New York points, 25¢ per 100; or 50¢ per bbl.
" " " Botson " 30¢ " 100, " 60¢ " "
" " " Philadel'a " 23¢ " 100, " 46¢ " "
" " " Baltimore " 22¢ " 100, " 44¢ " "

Lake and rail rates 10c. per bbl. less than all rail. Across lake to Ludington and Grand Haven, thence by rail, rates 4c. less than all rail.

"BRIGHTON."

Milwaukee, June 9.

Illinois Wheat Crop.

The Illinois agricultural department's monthly report issued a few days since, says the condition of winter wheat in the northern counties of the state promises something over three-fourths of an average yield per acre. There has been a slight improvement in condition each month since April 1, in this section. The condition of winter wheat in this portion of the state, June 1, 1882, promised more than an average yield per acre (104), or 22 per cent, better than the condition the first of June, 1883. In the central counties of the state, the condition of winter wheat has not improved during the past month, and less than two-thirds of an average yield per acre will be realized. The condition June 1, 1882, promised 101, or 40 per cent larger average yield per acre than the condition this year at the corresponding date. In some of the central counties the wheat will not pay for harvesting. The condition does not promise an average yield per acre in a single county in the central portion of the state. The estimate covers only the wheat area not plowed up, which was large, owing to the injury resulting to the plant from insects, the severe winter and unfavorable weather this spring. In the southern counties the continued unfavorable weather, and the damage resulting from insects, has so reduced the condition of the crops that there will not be half an average yield per acre in this portion of the state. The condition, June 1, gives encouragement for about three-fourths of an average yield in only two of the southern counties. In one-fourth of the southern counties there will not be one-fourth of an average yield per acre, while in some of the lower counties the crop will not pay for harvesting. The condition of wheat, June 1, 1882, in this portion of the state promised more than an average yield per acre (106) or 65 per cent larger yield than on the 1st of June, 1883.

THE GEO. T. SMITH IMPROVED
Middlings Purifier.

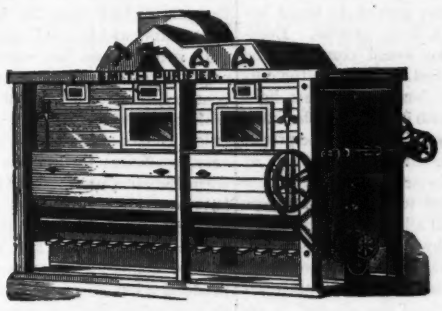
EXCLUSIVE FEATURES.

PATENTED AUTOMATIC BRUSH

PATENT SELF-REGULATING FEEDING DEVICE.

PATENT COIL SPRING ECCENTRIC CONNECTION.

Easily Adjusted.



2,500 SOLD IN 1882.

PATENTED APPLICATION OF GRADED, CONTROLLABLE AIR CURRENTS.

PATENT CLOTH TIGHTENER.

PATENT DOUBLE CONVEYORS,
IN SAME HORIZONTAL PLANE.

Light Running.

ADAPTED TO ALL SYSTEMS OF MILLING.

Fifteen Sizes, Suitable for Mills of all Capacities.

Single, Double and Aspirator Machines.

In the U.S. alone More than SEVEN THOUSAND **Are Now in Operation.**

SPECIAL NOTICE. *We guarantee every owner of a* ***GEO. T. SMITH MIDDLINGS PURIFIER*** *absolute immunity from loss by suits for infringement.*

The Proceedings of the Millers' National Association

at their Cleveland meeting, held Jan. 31, disclosed the fact that the manufacturers and purchasers of almost every Purifier now offered to Millers are liable to claims for royalty. To secure our patrons against damage from this source we have, at great cost, procured of the Consolidated Middlings Purifier Co. license under all their patents on Purifiers, more than eighty in number. Our license to use the traveling brush and graded air current (without which a successful purifier can not be built) is exclusive. The importance of these facts to purchasers of purifiers cannot be over estimated.

We are giving greater attention than ever before to the mechanical details and material used in the construction of our machines, having substituted ***STEEL SHAFTING*** *for iron, and adopted* ***HARD WOOD*** *for frames; but notwithstanding the immense outlay incurred in securing protection under all existing patents, and the cost of constant improvements,* ***OUR PRICES REMAIN UNCHANGED.***

Geo. T. Smith Middlings Purifier Co., Jackson, Mich.

A Grain of Starch.

"AN ANALYST" IN CHAMBERS' JOURNAL.

There may not seem much in a grain of starch, and in point of bulk there is very little; but we shall endeavor to show that there is a good deal of interesting and valuable information to be derived from a careful study of the little granule.

We are all familiar with such commodities as flour, potatoes, maize, sago, pease and arrowroot, and are consequently to some extent acquainted with what starch is; for all these substances consist essentially of starch along with water and some minor admixtures. If we take a slice of potato, for instance, and rub it on a grater of any sort in a basin of cold water, the water will become turbid, and a drop of it examined with a microscope will be found to contain a number of minute oval granules, which would in time sink to the bottom of the basin, forming a white deposit. These are grains of starch; and so minute are some varieties that three thousand of them laid end to end would barely make an inch.

The starch of every plant differs from its neighbors both in size and shape, and this has a considerable influence on the character of the vegetable organ in which it is stored up; the hardness of rice, for instance, being due to the fact that rice granules are exceedingly minute, with angular corners which fit closely and firmly together; whereas potato starch is large and round, with considerable interspaces filled with water, and so forms a comparatively soft mass. But, notwithstanding their outward points of difference, in chemical composition the starches are all identical, consisting of carbon, hydrogen, and oxygen—exactly the same materials as sugar is composed of, and better known as the component elements of coal and water. Leaving the many varieties of starch in the meanwhile, let us consider one species, namely, that of wheat, because it is the most important in this country, forming the basis of our daily bread.

An ordinary grain of wheat if sliced through the middle and examined as to its structure, will be found to consist of several layers, the outer a hard coating, which contains mineral salts, lime, sand, etc. Beneath this is a zone of matter very rich in gluten, the flesh-forming constituent of the wheat; while the central portion of the grain is occupied by a white powdery mass, which is nearly pure starch. In manufacturing flour, the two outer layers which together form the bran, are usually removed, leaving the white starchy flour of the central portion.

Let us now briefly consider the chief points in the chemistry of bread-making. If flour be worked up with water, it forms a sodden, insipid, indigestible mass; but if heated to the temperature of boiling water, the starch granules burst; and it is thereby rendered a little more digestible, although still forming a close stiff, and not very palatable cake. Such is the character of unleavened bread, and of sea biscuits, a slightly different form of the same thing. To be fit for digestion, starch must be dissolved or softened by boiling or baking; hence the reason why raw nuts are so indigestible as compared with the favourite roasted chestnuts; and, hence, one reason for cooking food which mankind has been taught by experience, ages before chemistry could give a scientific explanation of the reason why. Cooking is, in fact, a partial digestion; and the same is the case with baking, both being preliminary aids to the changes which take place in the mouth and stomach before the food is in a fit state for the preparation of the blood. Accordingly we bake our bread, and we bake it in the way we do because a soft spongy loaf is more readily moistened and acted on by the saliva and the juces of the stomach.

There is a good deal in the chemistry of bread-making; and our bread might be much improved if bakers had a more intelligent understanding of the science involved in their business; for although several improvements have been introduced of late years, the most of our bread is still prepared in the old fashion. The necessary quantity of flour is put into a trough with about half its weight of water, and sufficient salt and yeast or leaven, and then thoroughly mixed up into what is knows as the "sponge." (Here we may remark that the best flour takes up the largest quantity of water; and a rough test of the quality of the two samples of flour may be made by comparing the quantity of water required to obtain a dough of similar consistency.) After the sponge is made, it is left for about five hours in a warm place to ferment, after which it is kneaded with the rest of the flour, and again left to rest some time. The dough is then weighed into lumps, which are put in tins, and set aside until they have risen to twice their previous bulk. It is to the yeast or leaven that the rising of bread is due, and the action is identical with that of the fermentation of beer. The flour contains a small amount of a nitrogenous substance which changes a portion of the starch into sugar; the yeast then attacks the sugar, splitting it into alcohol and carbonic acid gas, the little bubbles of which try to escape from the mass of the dough, but get entangled by the gluten and gum which the flour contains; and thus every part of the bread becomes penetrated with little cavities. Eventually the fermentation would cease, and the bubbles of gas would find their way to the outside, thus leaving the dough much less light and spongy than we wish it to be, but the baker guards against this by putting it at the proper time into a hot oven, the heat of which at first increases the fermentation. In a few minutes, however, the temperature becomes sufficiently high to kill all the yeast germs; the fermentation is thereby stopped; and by continued heating, the starch granules are burst, and the mass is fixed in the porous form it has then attained. A little of the alcohol is retained in the bread; but practically almost the whole of it—in London amounting to some three hundred thousand gallons per annum—is driven off by the heat. During the baking, the starch of the outer portions of the bread has been browned by the heat, and thereby changed into a sugar known as dextrin or British gum; and perhaps this fact accounts for the fondness of some children and even grown up people for crusts.

Of late years a system for making what is called aerated bread has proved very successful, and is free from the slightest objection. The dough is made by mixing the flour with water saturated with carbonic acid gas, which on heating is expelled from the water, and thus distends the dough, producing a light, spongy bread, with no loss of starch or sugar, and without any injurious or objectionable ingredient having been introduced.

Having dealt with the baking of the bread, let us now briefly consider its further progress in being adapted for the wants of the body. As soon as a piece of bread is put into the mouth an abundant flow of saliva takes place; and in fact it needs no actual tasting to induce this flow, for even the sight or smell of anything nice is quite sufficient to "make the mouth water," as we express it. The saliva is poured into the mouth by three pairs of glands to the extent of some twenty ounces a day. It consists in great part of water, with a little salt, and a peculiar substance called ptyaline, which possesses the property of changing starch into sugar, the change being accomplished most completely when the starch is dissolved or baked, and at a temperature of about 98° Fahrenheit, the normal temperature of the body. Although this ptyaline is present in the saliva to the extent of only one part in 500, yet, on its presence and action, the heat, and consequently the life of the body, is largely dependent; hence the importance of avoiding any unnecessary waste of it, such as unfrequently and unnecessarily accompanies smoking. Hence, likewise, we see the importance of chewing the food slowly and thoroughly, that it may be all brought under the influence of the ptyaline; and thus we can understand how indigestion or dyspepsia may be caused by hasty chewing or by excessive spitting, the starchy portion of the food in either case lying in the stomach as an undissolved mass.

Bread-making, we have already stated, is a form of cooking. The heat of the oven has converted the outside of the bread into sugar, and the starch in the inside has, in fact, been boiled in the steam of the water which the dough contained, so that it has become capable of being readily converted into sugar. The porous nature of the bread favors this conversion, for the saliva easily penetrates through the whole of the spongy mass, and the change is still further assisted by the water which the bread contains to the extent of some forty per cent. Biscuits, on the other hand, being, as a rule, dry and non-spongy, are less suitable for ordinary use, although containing in the same weight far more food material than bread.

It may surprise some of our readers to be told that the starch of bread has not the slightest nutritive property. Its sole office is a heat-producer, and, just like the coal of the engine, the starch or sugar is burnt up inside us to keep up the temperature of the machine. It is the gluten, the sticky, tenacious matter in the grain, which is the nutritive flesh-forming material; but in the present article we have no space to follow the changes which it undergoes in the system, for we are simply treating of starch at present, and we trust we have made it clear how it is changed into sugar, and thus made soluble and fit for absorption into the juices which keep the body at a uniform temperature and in good repair.

It is a common but mistaken notion that sago and tapioca are very nutritious. On the contrary, they consist almost wholly of starch, with only about 3 per cent of gluten, so that unless cooked with milk or eggs, they form a very insufficient food. The same is the case with Indian corn flour and arrowroot, which have scarcely a particle of nutritious matter in them, so that it is a great mistake to feed an invalid or a child on such materials. They are no doubt useful, as easily digested heat producers; but they must be cooked with milk or eggs before they are of much use for actual uutriment; and many a child has been starved to death through its parents' ignorance of this fact. In is true, medical men often recommend arrowroot for those in delicate health, as it is of great importance to keep up the natural heat of the body with the least exertion of the digestive organs; but it cannot be too widely known that arrowroot pure and simple is a mere heat producer; and milk, beef-tea, soup, or other suitable flesh-forming food must be given with it, if the child or invalid is to be kept alive. On the other hand, semolina, hominy, lentil meal, pea-flour, etc., not prepared by washing, contain a much greater amount of flesh-forming material than sago, arrowroot. etc.

The starches are largely used in several important manufactures. Dextrine or British gum is prepared by heating starch to a temperature of about 400 degrees Fahrenheit, and is preferred to gum-arabic because it is not so liable to crack or curl up the stamps or other paper prepared with it. Immense quantities of starch are used, too, in the manufacture of glucose or grape sugar, which has exactly the same composition as starch and is prepared by acting on the starch with sulphuric acid (oil of vitriol), which has the same effect as the ptyaline of the saliva.

MFG. AND TRADE.

Neevins & Pudawiltz, Grand Rapids, Wis., have placed an order with the J. T. Noye Mfg. Co., Buffalo, for twelve pairs of Stevens rolls.

G. F. Arredson, Carpenterville, Ill., has placed an order for ten pairs of Stevens rolls and other machinery with the Noye Mfg. Co., of Buffalo.

The mill of R. Lightcap, of Hazel Green, Wis., is being overhauled by the Gratiot Mfg. Co , of Chicago, the machine of the company being used on the first break.

H. Hillman, of East Freedom, Pa., is changing over his mill to the Thayer system, and has ordered of W. & N. Thayer, Westerville, O., the necessary machinery.

W. T. Pyne, of Louisville, Ky., has placed an order with the J. T. Noye Mfg. Co., of Buffalo, for a double Stevens roller mill for J. E. Mills, Greenville, Ky.

Cole, Cooley & Co., of Richmond, Ill., are changing their mill to the Gratiot system. W. H. S. Moore, of Turner Junction, Ill., has the contract for the change.

N. L. Walker, Nicholson, Pa., is putting in his mill a Rounds sectional roller mill and a single detached mill with Stevens dress, to be furnished by the Noye Mfg. Co.

Jesse Heacock, the millwright, of Millville, Pa., has placed one of Griscom & Co. & McFeely's millstone dressers in Uriah McHenry's mill at Bloomburg, Pa.

J. M. Haines & Co., of New Albany, Ind., will remodel one of their mills to the roller system. Odell rolls will be used and the Richmond City Mill Works furnish the balance of the outfit.

The Paige Mfg. Co., of Painesville, O., have their northwestern headquarters at 371 and 373 Sibley St., St. Paul, with Messrs. Fairbanks, Morse & Co., where they will be pleased to see their friends.

The Case Mfg. Co., Columbus, O., have been awarded the contract of A. L. Jacobs, Pana, Ill., for a gradual reduction mill on the Case system, using a full line of their breaks, rolls, purifiers, scalping reels, etc.

Barton, McCortle & Co., of Cumberland, O., have determined to adopt the roller system, and have placed an order with the Jno. T. Noye Mfg. Co., of Buffalo, N. Y., for five pairs of Stevens rolls with latest devised frame.

The Milwaukee Dust Collector Mfg. Co., are furnishing Hecker's new Croton mill with 37 Prinz dust collectors to receive the exhaust from their purifiers, roller mills, and grain cleaners. They will have no dust room in their mill.

TOLEDO MILL PICK & STONE TOOL MFG. CO
MANUFACTURERS AND DRESSERS OF
MILL PICKS
MADE OF THE VERY BEST DOUBLE-REFINED ENGLISH CAST STEEL. ALL WORK GUARANTEED FOR TERMS &c. AND WARRANTY — ADDRESS
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COR. ST. CLAIR ST. TOLEDO, O.

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VIEWS OF MILLS, MACHINERY, ETC.
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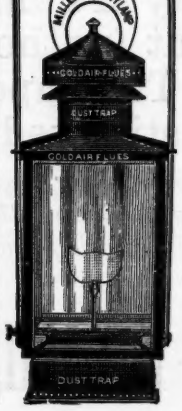
Millers Safety Lamp



For gas or kerosene. Hundreds are giving the best satisfaction in this and adjoining states.
The only dust-proof mill lamp made and where known no other lamp is in use.
Insurance policies made in their favor.
For reference write to Washburn mills, Pillsbury, or any other Minneapolis mills.
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TWO PERFECT MILLING MACHINES

PEERLESS DUST COLLECTOR. | MORGAN SCOURER AND POLISHER.

READ THE TESTIMONIALS.

SEND FOR PRICES.

MINNEAPOLIS, Minn., Oct. 30, 1882.

Messrs. Kirk & Fender, Manufacturers of Morgan's Wheat Cleaners and Scourers, Minneapolis, Minn.

GENTLEMEN: * * * Would not be without them for anything. I can see that my bolting capacity has increased largely; the same with my purifiers. The only way I can account for this is that my wheat is well cleaned. I do not have any oats or fine fuzz to contend with, consequently my bolts and purifiers work free and open.

W. H. HELFRICH, Head Miller "Anchor" Mill.

MILWAUKEE, Dec. 5, 1882.

Messrs. Kirk & Fender, Minneapolis, Minn.

GENTS: * * * We have been running both the Morgan Scourer and Polisher for the past 14 years, and up to the present we consider them the best in the market. Respectfully yours,

C. MANEGOLD & SON.

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GENTLEMEN: We have had the Peerless Dust Catcher about six weeks; it is giving the best of satisfaction. We are working it on a purifier which takes its middlings from the head end of the coarse grader. The dust from this grade of middlings is the softest, stickiest material in the mill, being worn off the coarse middlings while traveling in a conveyor to the grader. It has given us no trouble whatever, more than to oil it once a day, and I say, without fear of contradiction from any one who will examine or give the machine a trial, that it is the best machine ever offered to the millers of America for the purpose of collecting the dust drawn out of a purifier.

Yours truly, O. H. TITUS,
Head Miller of the Wm. Lea & Son Co.'s Mills, Wilmington and Newcastle, Del.

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SOLE MANUFACTURERS, MINNEAPOLIS, MINN.

A NEW DEPARTURE!

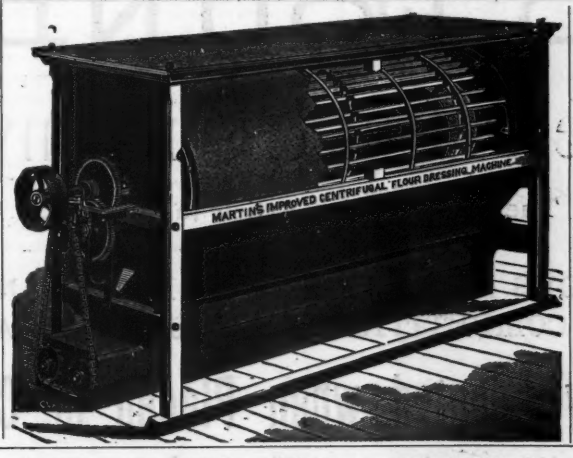
We are the Sole and Exclusive Licensees for this Country under the **Moritz Martin Patents** on

CENTRIFUGAL FLOUR DRESSING REELS

THE CENTRIFUGAL *has more than FOUR TIMES the capacity of the ordinary reel, and will make clear flour and a clean finish on stock that cannot be treated in the common reel without loss, no matter how much silk it is passed over.*

IT IS SPECIALLY ADAPTED *to handling soft, re-ground material, full of light impurities, whether from rolls or stone.*

IT IS VASTLY SUPERIOR *to the common reel for dusting middlings.*



IT IS INDISPENSABLE *to a CLOSE FINISH in any system of gradual reduction milling, and will improve the quality of the low grade flour at the same time it makes the offal cleaner.*

IT MAKES A CLEAN SEPARATION *on caked and flaky meal from smooth rolls, which no other style of reel can do.*

THEY CAN BE USED TO ADVANTAGE *as a complete system of bolting, to the exclusion of the ordinary reel.*

And we are now prepared to fill orders for machines with latest improvements, which include

OUR NEW DOUBLE CONVEYORS, CLOTH FIXING AND STRETCHING DEVICE, AND SIMPLIFIED MANNER OF DRIVING.

OVER ONE HUNDRED SOLD IN SIX WEEKS!

REFERENCE TO LEADING MILLERS IN THE UNITED STATES.

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COMPLETE,

CORRUGATED AND SMOOTH ROLLS,

CENTRIFUGAL REELS,

Caldwell Coveyor Kept in Stock.

ALL KINDS OF

MACHINES FOR DRESSING WHEAT & FLOUR.

STEAM AND WATER PUMPS,

For City Supply and Fire Protection.

ARCHITECTURAL CASTINGS,

SHAFTING, HANGERS, BOXES,

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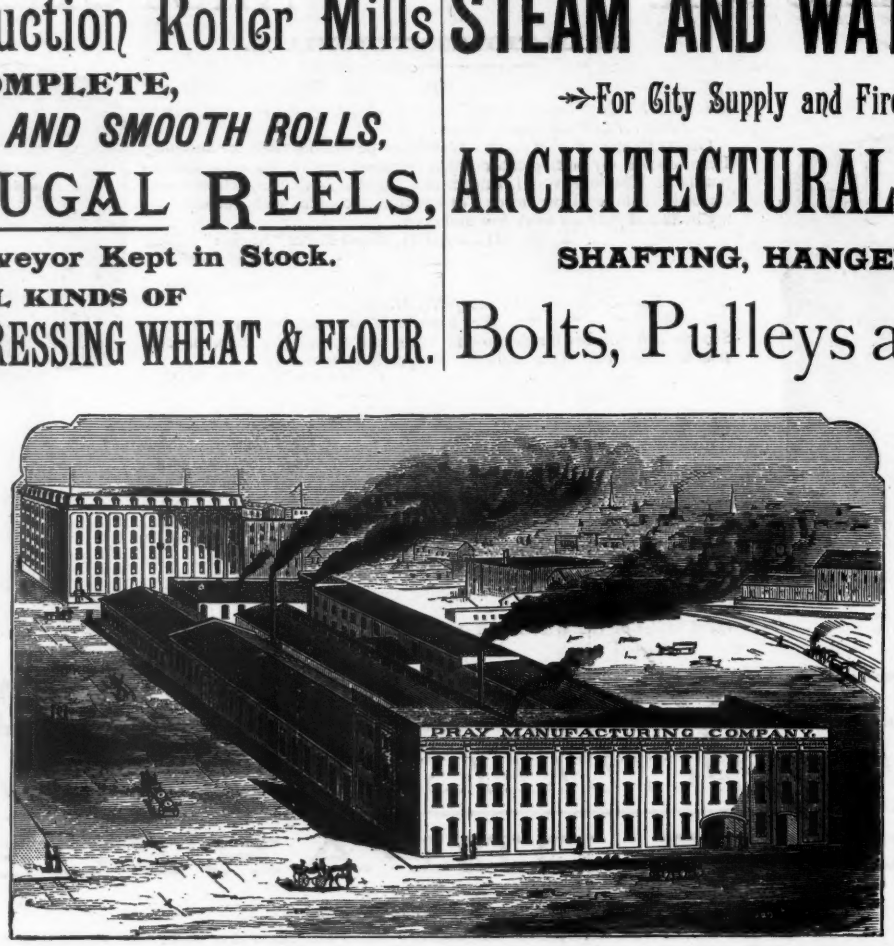

Jack Screws. Wagon Lifters. Rolls Re-Corrugated. Rolls Re-Dressed.

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PRAY MANUFACTURING CO.

ROUGH NOTES.—XXIX.

FROM A WORKING MILLER'S POCKET BOOK.

In the last "Rough Notes" something was said about the relation which the proportion of sharp material in a reel bore to the product of that reel, and an illustration was used to show the effect of decreasing the amount of sharp material in the reel at the same time that the flour was taken out; or to speak more accurately, immediately after the flour was taken out, or the desirable portion thereof, and before the stock went into the next reel. This was done by placing scalping cloths at the tail of each reel which gradually increased in fineness, counting from the first reel downward. Thus the stock became finer as it passed from reel to reel. There are other means of accomplishing this result, which will be mentioned in the course of this contribution.

***

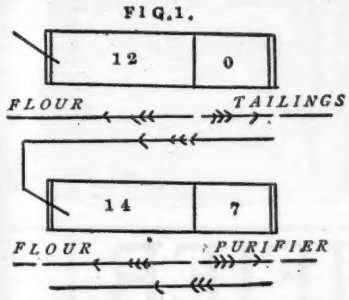
The whole object of this is to keep the material going into the various reels in a condition so that it will contain the proper proportion of soft material to bolt clean, and at the same time a sufficient amount of sharp material to give the reel its required capacity. One great point with the centrifugal reel is that it will bolt softer stock than a common reel. It will rebolt flour which would paste a common reel so that little or nothing would come through.

This principle of keeping the stock as soft as possible to bolt is one in which I have great confidence. By such an arrangement it is possible to keep thoroughly dusted stocks going on the rolls or purifiers, which facilitates the work of feeding or purification, and gives the rolls less to do and a better chance to do their work well; therefore a less number of reductions of the middlings and other stocks would be necessary in order to finish up. It is quite often the case that floury material is run on the rolls to be reduced, when such a reduction is not necessary. By merely removing some middlings or sharp material, which there is in this stock, it could be bolted and produce white clean looking flour. Then by taking the middlings which are separated from this stock, they can be reduced and thus accomplish in a direct and simple way and at a single reduction, what it would have taken many to accomplish were the floury stock and warm material run to the rolls together.

***

To call attention to other methods of the application of this principle, I wish to compare one method of clothing reels and of making the separations and, in connection therewith, the one I favor. For instance, take the stock from the sizing rolls. One way of arranging and clothing for such a separation is here shown:

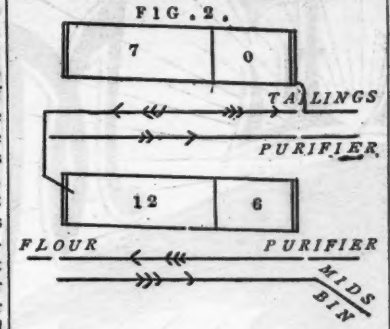
FIG. 1.



Here the stock from the rolls is going on a 12 cloth and before any of the middlings are taken out, flour is taken from this stock. What goes through the 0 cloth goes into the next reel which to compensate for the probable result with a coarser cloth is clothed with No. 14, for the flour portion, and No. 7, through which to take the fine middlings for the middlings bin. The stock which goes over the No. 7 ordinarily goes to a purifier. The details of such an arrangement, though not uncommon, I think are altogether objectionable. I would substitute the arrangement shown in the next illustration.

Here the product of the sizing rolls goes on a No. 7 cloth first, where the flour and fine middlings are taken out. Then the material which goes through the 0, is dusted and can go directly to the purifiers. The stock which goes through the No. 7 is soft enough to bolt clean and bright through the No. 12 cloth on the next reel. The tail of this reel is No. 6, which will carry over some stock that originally went on the No. 7. This is on account of its being softer in this reel, that is, containing a smaller proportion of sharp material,

FIG. 2.



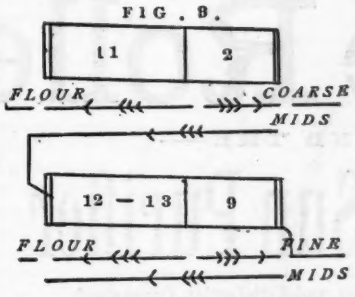
han on the reel above where it went through the No. 7, and had the coarse middlings to make it bolt freely.

The product of the 6 cloth will be much cleaner and brighter than that of the 7 on the tail of the reel in the other instance, because it does not have the heavy, coarse middlings out of which the flour has been taken and which will wear off or beat their impurities through the cloth. I think it is very clear that this arrangement shows benefit to flour as well as the middlings. In the first place the coarse middlings are dusted over a No. 7 cloth which takes out all the flour and fine middlings, and secondly, the flour and middlings in the second reel are benefited by not being associated with the heavy and sharp stock above.

***

It is not long since that the following arrangement or its equivalent was frequently used in separating the middlings and flour of the four middle breaks:

FIG. 3.



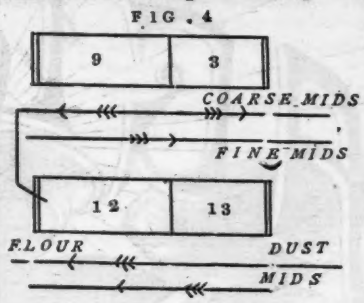
Such an arrangement has the same objections as I see it as the one shown first in the handlings of the sizing stock. In the diagram here given there is flour, together with all grades of middlings as course as 000, going into the first reel, and flour is taken off on the first one through a No. 11 cloth. It might be a 12 or 13 and the evil of such an arrangement would be equally as great. In any event coarse middlings go off over a 2 cloth and the product of this cloth together with the No. 11 would go into the bottom reel, and it would still be too sharp to bolt clean on the numbers given, unless a larger portion of the product of the No. 11 went into this reel, in which event the stock would be too soft to dust the middlings which passed over the 9 cloth. Thus it will be seen that in one instance the flour will be sure to contain more impurities than it would under more favorable circumstances, and in the other the stock would be too soft to dust the middlings over the No. 9 cloth. I give this illustration because it is one which I knew as having been used in a number of instances, and with the result as I described.

***

Having had experience with the above arrangement, the one given below is what suggested itself as a remedy.

Here the middlings are scalped and graded first and the flour taken out afterward. The flour and dust middlings are taken out through No. 9 cloth and the coarse and fine middlings graded over a No. 3 or any other desirable number. This brings the stock going into the second reel soft enough to bolt clean and still sharp enough to bolt freely, this stock having originally passed through a No. 9 cloth. This arrangement not only brings this stock soft enough to bolt clean, but it is also sharp enough in the first reel, having all the large middlings with it, to thoroughly dust all grades of middlings over a No. 9 cloth, and before it gets to the grading number. This is quite desirable and saves a dusting reel which would be necessary on soft wheat according to the first arrangement. Altogether this plan works very well. It takes advantage of the large middlings to aid in dusting, and at the same time gives the stock to the second reel soft enough to bolt clean.

FIG. 4.



The clothing of the upper reel is a good deal a matter of judgment. In a low grinding buhr mill a 9 cloth would be too fine, or in fact in any mill where the grinding is done on buhrs. These illustrations show the principle and details of arrangements to reduce the proportion of sharp stock before taking off flour, and attempts to show the benefits to be deprived therefrom.

Steam Jacket Heater and Purifier.

The Baragwanath steam jacket heater, which the annexed cut illustrates, has been in use for over five years with very satisfactory results, as it almost invariably delivers its water several degrees above the boiling point, and by this means reduces back pressure on the engine, and assists greatly in keeping the boilers clean. As no part of the steam jacket heater is in contact with the air, it is, therefore, a non-radiator. The exhaust steam passes up its internal tubes, and down around the external sides of its water chambers, thus giving the apparatus a greater amount of heating surface than can be obtained by most heaters of the same capacity. Being in contact with exhaust steam only, the water passing through the heater is made as hot as the exhaust steam. It is a well known fact to those acquainted with the nature and properties of water, that in order to purify it, one of the most essential things is that it should boil, and in order to do this the heater must be of sufficient capacity to hold the water long enough, and so constructed that the impurities in the water may be collected so that they can afterwards be expelled and thus prevented from entering the boiler. Everyone who has had the care of boilers knows how important it is that they should be kept clean so that no scale will accumulate to cause an unnecessary waste of fuel by keeping the water from all contact with the plate.

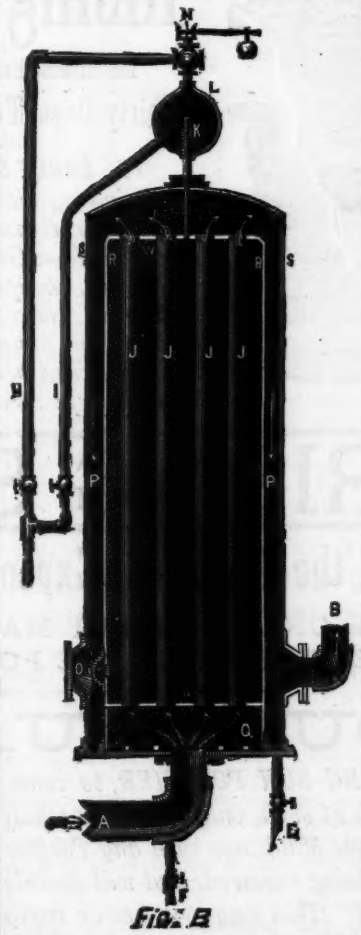


FIG. B

Fig. B is a sectional view of the Baragwanath feed water heater and purifier.

The apparatus is a cylindrical vessel and consists of two parts; the heater proper or water chamber, and its case. R R represents the body, W W its heads and J J J J tubes running from one head to the other.

S S represents the case, P P an annular space between water chamber and case.

The exhaust steam from engine enters chamber Q from pipe A, up through tubes J J J J, and down annular space P P and passes off through eduction pipe B.

The water is forced into heater at feed pipe C, and leaves the heater at D. O represents hand plate, L scum chamber, K pipe for connecting scum chamber with heater, and N safety valve.

When water in heater boils, the impurities rise to scum chamber, the lighter or gummy body remains on top and is blown off from pipe H. Some matter is precipitated in scum chamber and is blown off through pipe I.

E F, drip pipes for draining water of condensation from heater.

There are over eleven hundred at work, each giving the utmost satisfaction. A descriptive pamphlet with references will be mailed to anyone addressing Wm. Baragwanath, Quincy St., near Des Plaines, Chicago, Ill.

The Winnipeg *Commercial*, of May 29, says: "Winnipeg dealers have thought proper to suspend shipments to eastern markets, either being dissatisfied with the present prices or in hopes of an early advance. The result has been a general stagnation in the grain markets. The principal mill in the city still continues to run only half time and in the meantime millers are only supplying local demands for flour. A considerable quantity of wheat stored in country elevators has been removed by the owners during the week to the city, but few sales have been reported. Receipts from farmers still continue to be small though a little in excess of last week. In many cases grain is not threshed out, and in southern Manitoba want of railway facilities is said to be keeping grain out of the market."

The improvements to the Thon & Hamm mill at St. Paul, giving it a larger capacity, have been completed and the mill starts off finely. The improvements embraced the changing of the mill to the roller system, and cost about $10,000. The work was done, as was also the new machinery furnished, by the Pray Mfg. Co., of Minneapolis. The mill has a capacity of 100 bbls. per day, and is equipped substantially as follows: 5 double and 1 single sets of Livingston rolls, 5 Smith purifiers, 2 Kirk & Fender dust catchers, Minneapolis centrifugal reel, Hughes bran duster, Barnard & Leas wheat separator, Morgan scourer, and Kurth cockle machine.

"The American consul at Crefeld, Germany, says that 350,000,000 bus. of grain is his estimate of the European deficiency for 1883, and he avers that the reports of the continental board of commerce have presented such facts and drawn such conclusions, and that their publication has been suppressed by order of the government.

According to the *Wall Street News*, of New York, the free canals are beginning to get in their work, more than twice as many boats clearing so far this season than at the same date last year, though the canals opened a month later this year.

The regular telegraph companies have been forced to reduce their rates on messages between the board of trade and produce exchange of Chicago and St. Louis by the competition of the Board of Trade Telegraph Co., newly organized.

The oat meal mill at Oregon, Ill., owned by Forrest & Co. and operated by Douglas & Stewart, was burned on the 8th. Loss, $75,000; partly insured.

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—AND THE—

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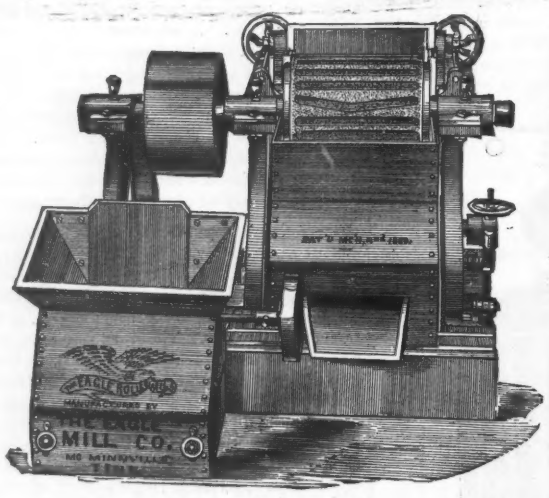

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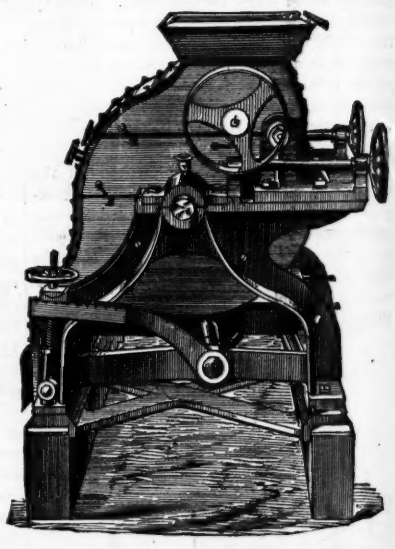

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Minutes of the Dust Club.—VIII.

BY THE SECRETARY

Bro. Stoneman on taking the chair said: "Brothers, we did very little more than elect a temporary chairman last meeting. I propose we commence where we left off."

Bro. Mace: "Bro. Grist gave a little practical lesson at last meeting which reminds me very much of a story I once heard of a technical lesson given in court to a practical expert by a lawyer, and may not be out of place now. The matter in dispute was the wall of a mill which was being built in Newburgh, N. Y. The wall fell shortly after its erection. When the builder put in his bill it was not acknowledged by the owner, who claimed that the wall was badly constructed and put up in an unworkmanlike manner. The builder was ready to swear that the wall was built by competent mechanics and was executed in a creditable manner. The case came up for trial, the builder being the plaintiff. The defendant's counsel worked at the 'bench' in a different way in his early days. He submitted the builder to a severe cross examination in which his practical knowledge cut a rather sorry figure. The point of the question turned on the plumbing of the wall, and whether the plumb rule was correct. Plaintiff swore he knew it was correct. I give it from memory:

Q. "(By defendant's counsel.) 'How do you know the plumb rule was correct?'

A. " 'Because I am certain?'

Q. " 'Be so good as to explain to those gentlemen (pointing to the jury) how you know it was correct.'

A. " 'I am certain, because my workmen are good, careful men.'

Q. " 'Answer my question, sir. How do you know the plumb was correct?'

A. " 'It must be correct, because it was made as others are made.'

Q. " 'How are others made, and how are you able to prove whether it is correct or not?'

A. " 'I am not here to answer questions of that kind. I don't know. I am not a carpenter.'

"Counsel, turning to the jury. 'Gentlemen: This man came into court to make a claim against my client. He swears the wall was properly and accurately built, and yet he does not know anything about a plumb rule, if we believe his own words, because he says he is not a carpenter. Now, gentleman of the jury, I can see honesty and integrity depicted in all your countenances; I can also see that you were selected in this case by our worthy sheriff because he knew practical cases of this kind would come up at this term, and knowing that, selected this eminently intelligent and practical jury. Now, gentlemen, you are all aware that if a plumb rule is not correct the work that it is applied to will not be correct, or geometrically speaking, the wall will be out of perpendicular. In this case such was the fact. Now, Mr. Builder, I will tell you how to prove your plumb rule, so that henceforth you will be able to build a wall that will be perpendicular and not fall, as my client's did, and warn you in future against the consequences attending rash assertions. Men often come forward and make a claim for what they have no right to, or have forfeited, and are ready to fortify their demands by swearing that they know practically what they do not know. Now, Mr. Builder, if you ever take interest enough in a future contract to see that the wall shall be built in a perpendicular manner, I will tell you how to make and prove your plumb rule. First take a piece of board a little more than the proper length, breadth, and thickness which you require, and with a pair of compasses strike a circle on its face within a few inches of each end. Plane straight on the edge until the sides of the circles are touched; repeat on opposite edge. When this is done, your piece of board will be of a parallel breadth. Then a line drawn through the center, with a slit for the cord, and an opening for the play of the "bob," will complete your plumb rule. I am not an architect, gentleman of the jury, but I believe no architect, builder, or workman, will say I have not given a practical method for proving a plumb rule. One word more, gentlemen: I think when a master builder comes into court, and takes it upon himself to swear that his work was properly executed, he ought to be able to give us proof, when asked, of the workmanlike manner of its accomplishment. I now ask a verdict for my client," and looking sarcastically at the witness, said, 'step down, sir.' The jury unanimously declared in favor of the defendant, the foreman saying that he himself, and his fellow jurors, were of opinion that the wall was badly constructed, and out of plumb, and that was the reason of its fall.

"It may be asked here, was the counsel for the defendant technically correct in his method of proving a plumb rule of any length? And it may be further asked, how many masterbuilders, or workmen, either, are there at the present hour, who, if called upon suddenly, could practically demonstrate, in proper language, the geometrical construction of a simple plumb rule, or straight edge? However astounding it may seem, I have come across many workmen who could not, without some thinking and groping, properly set out the egg oval opening, or "bob" hole, in their plumb rule. Archimedes is reported to have said, that if a prop, or position, and a lever, were given to him, he would move the world. Technical knowledge is the prop, the position, and the lever; and, without the ambition of the great Greek mathematician, it will enable a man, at some time or other, to lift himself in the world, and, morally and socially speaking, lift up the world at the same time."

Bro. Tovey: "That is all very well in its way. It used to be done in that 'ere way seventy years ago when I was young, but I think that 'ere lawyer lost sight of the question and simply gave directions for making a plumb rule instead of proving one. The circle is perfect enough in theory, but it is not the best way. The plumb bob is to my mind as obsolete as the old millstone that used to be in use years ago, but I suppose there are many who consider a good spirit plumb and level a luxury.

Bro. Mitchell: "Mr. Chairman and brother dusties. I understand frictional gearing is being introduced into rolls of late. I like that, as it tends to do away with noise, and, besides, frictional gearing has a great deal to recommend it. It seems to me to be coming into more extensive use every day. Of course you all know the mode by which motion is communicated. Frictional gearing is intended as a substitute for toothed wheels, and the improvement is very great. The mode by which the motion is communicated is extremely simple. The peripheries of the wheels are provided with continuous and endless ⋀-shaped grooves, the extreme points being removed to insure a good bite, and each fitting into the recess formed between two ⋀⋀ on the other wheel. The smallest possible pressure is thus made to give a very large amount of force. It is calculated that the adhesion, or driving hold of the surface of these grooved wheels, is about nine times that of a plain surface of frictional wheels. When working at 1,000 circumferential feet, the contact pressure requisite for transmitting a standard horse power is 22 pounds; at double that circumferential speed, 11 pounds, and in the same relative proportion at other speeds. This system of gearing seems to be thoroughly adapted both to heavy and light machinery; and whenever there is a liability to sudden concussion or strain, it is invaluable, since from its very principle it is evident that they cannot be damaged, for in case of a sudden jerk a slight and immaterial slip is the sole inconvenience, the wheels being left in quite as good order after the jerk as they were before, instead of broken teeth, as would be the case with ordinary tooth gearing, having to be repaired before the working could be continued. The smoothness with which the frictional gearing works is remarkable. Some of the wheels in this system have been in use for years, and continue to give the greatest possible satisfaction, and it is considered that where the wheels are properly proportioned to the work to be done, they are more durable and transmit power with less waste by friction than is incurred by using toothed gear. This is a subject that concerns millers a good deal, and I would like to hear the views and experience of others on it."

Bro. Dunn. "As small underrunner mills are now being extensively used in many places for finishing up middlings, I will give you my plans for tramming the spindle, and in doing so I will give my mode in tramming both upper and under runners. All of you of course know how this operation is performed, but as I see our worthy secretary has taken the pains to publish our proceedings, I will give it for the benefit of the craft. The spindle should first be trammed with the belt off, then the belt should be put on and tightened up to the proper working tension, and the spindle trammed again. When the spindle is trammed with the belt off, it is much more easily turned by the hand, and consequently there will not be so much tramming to do when the belt is put on. The tramming of the spindle is very important, as a millstone cannot be properly balanced until the spindle is in tram. The centre of the bail must be exactly in the centre of the stone, and then it must be made fast so that there is no chance for it to move. The runner must be in good face and out of wind. When the tram quill touches on the circle all around alike, having the driver fitted and keyed to the driving sides, the bail must be made fast to give an equal bearing on both sides of the driver. The next thing in order is the tramming of the bed stone with the spindle. In putting the spindle in its place, the collar should be exactly in the center of the stone, and if coggearing is used, the mash of the cog must be taken into account. When these things are properly adjusted, and the spindle in tram, the bottom of the spindle should never be moved afterward to tram, more especially in coggearing, the reason being that every time the bottom, or foot of the spindle is altered, the bearings of the cogs is altered with it, making them sometimes bear on the bottom and sometimes on the top, at one time a little too deep, and not deep enough at another time. The proper place to tram is at the top of the spindle, and then as long as the bed stone don't move, or the toe don't shift in the dish, there will always be a steady motion, and the same bearing. When the spindle is at right angles with the face of the bed stone, it is in perfect tram.

"Where the runner stone is fixed rigidly to the spindle, it is evident that any deviation of the foot of the spindle from a perpendicular line, will throw the stone out of tram. In tramming an under runner this constitutes a very

FIG. 1.

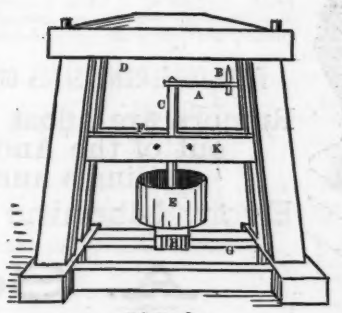
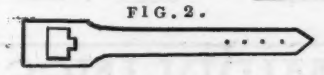


FIG. 2.



great advantage in favor of the balanced or cockhead runner, that even when not in perfect tram will continue to work. But millers and practical men can see the advantage of keeping a mill in tram, whether cockhead runner or stiff runner. Referring to the accompanying cuts, we will proceed to give an explanation of the operation of tramming the spindle of an under runner mill. After being certain that the face of the bed stone D, is true and properly dressed, construct of wood about an inch in thickness a *tram boy*, Fig. 2, the length of which should be six inches longer than half the diameter of the mill stone. At one end it should be six inches wide, gradually tapering to one inch at the point. On the wide end of the tram boy make a square, as shown in Fig. 2, to fit the head of the spindle, and on the smaller end bore four or five small holes in line, to take in a quill. Having made the tram boy, you remove the runner stone, hoop and hopper frame of the mill and screw down the bed stone frame, as shown in Fig. 1. Fit the tramboy A, (Fig. 1) to the head of the spindle C, and wedge it there; place the quill B in one of the holes of the tram boy and revolve the spindle by taking hold of the pulley E with the hand. It is evident when the face of the bed stone D is at right angles to the spindle C (in tram with it,) that the point of the quill B will touch or scrape the face of the bed stone equally or evenly all around. Now should the spindle be found *out of tram*, the quill will rub hard on one side of the stone and touch lightly on the other side. To make the quill touch the face of the bed stone evenly all around, or in other words to get the spindle C at right angles to the face of the bed stone D, the foot of the spindle can be moved to the left or to the right, or backwards and forwards, by using the four wedges O, and by their adjustment the spindle C is made perpendicular and kept in place by driving the wedges O together in their places. It is desirable to see if the mill is in tram after you have dressed the stones, and not *wait* to tram the mill when the grinding shows something is wrong, for nothing is more true than that "an ounce of prevention is better than a pound of cure," when applied to mills.

"To re-babbitt the bush or box, remove the hopper-frame and hopper, bed stone and frame, together with the runner stone and hoop. If the spindle is found to have too much play or lost motion, take up the slack by screwing up the bolts that run through the journal girt. If the boxing or bush is worn out, we must re-babbitt it in the following manner: Unscrew the bolts that hold the follower K, Fig. 1, to the journal girt F, and take the follower K out and remove the old babbitt. Replace the follower and the spindle in position, using two small pieces of wood four to six inches long, (depending upon the length of the bearing,) one inch wide and half an inch thick, which are put between the journal girt and follower and on both sides of the spindle, and which answer the two-fold purpose of holding the spindle in position and dividing the journal into two parts. When the mill is found to be in tram, stop up the bottom of the box around the spindle with putty or clay, then pour into the spaces, melted babbitt, which on cooling forms the journal or box which the spindle runs in. None but the best babbitt metal should be used.

"The correctness of the driver should be fully tested, so as to tram the spindle with the face of the stone. Mr. Gent and others have been advocating rigid drivers of late, which means that the driver should be fastened rigidly to the spindle. The rigid driver has been found to work well in many instances, but there is some difficulty in keeping it perfect all the time. In order to do even granulating, it is of course necessary to have the faces of the stones exactly parallel with each other. The pressure of the driving apparatus makes it almost an impossibility to keep the spindle in tram, and for this, if no other reason, it is quite difficult to keep the faces of the stones parallel with each other when the runner is fastened rigidly to the spindle, because, whenever the perpendicular of the spindle is disturbed, the parallel of the faces of the buhrs will be also disturbed.

"As even granulation is necessary in manufacture of flour the means that will effect this to the best advantage whether by a rigid or loose driver is the best, but in any case the spindle must be in tram. Both sides of the driver should bear with equal force, otherwise the stone will be forced out of its proper position causing one side to run high and the other low.

"One of the most common methods is to fix the driver on the spindle at right angles with the bail, but it must have considerable clearance to allow the stone to balance freely on the bail. Both ends of the driver must catch the stone exactly alike, because if one end touches a hair's breadth before the other it will tip up the stone on that side, and bring the opposite side in contact with the bed stone, and a constant vibration will ensue. In locating the driver, secure it firmly on the spindle and stand it up plumb with the lower end up, and the cockhead down in the socket in the bail. Make it secure in this position and then fix a tram with one end bearing on the toe of the spindle, and the other end to sweep the face of the stone at the periphery. By turning the tram and shifting the spindle until the tram sweeps the face all around equally, the spindle will be true with the stone. This, however, can only be learned by practice, and it is for those who are learning the business in the mill that these remarks are intended. Next week I'll have something to say about grain cleaning, and the efficiency of fans." The meeting then adjourned.

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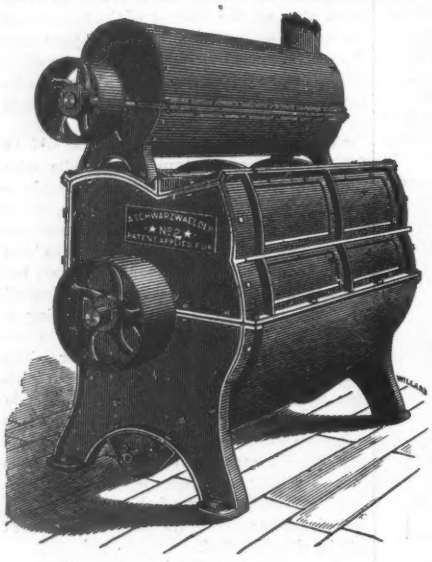

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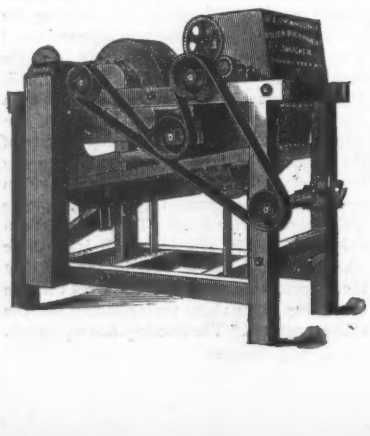

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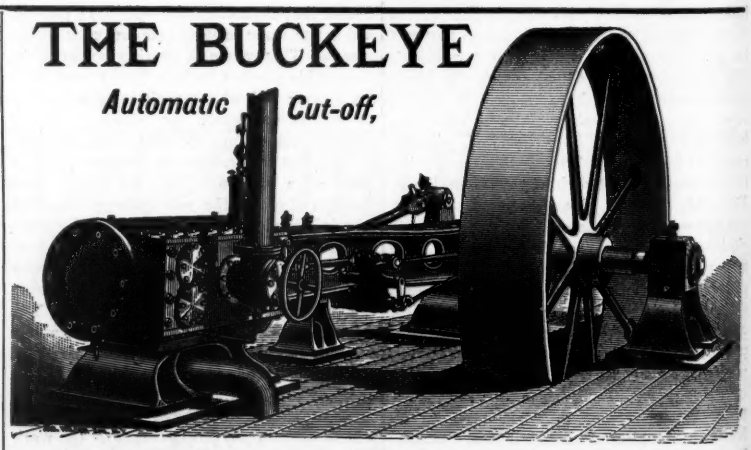

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Methods for Detecting Alum in Flour.

BY A PRACTICAL CHEMIST.

The subject of adulterating flour with alum has attained some importance since the analysis made a few years ago by Professor Mott, of New York. The methods of making the analysis may interest a great many millers, and we propose, in this series of articles, not only to give the best modes for detecting adulteration by alum, but every other substance as well. We have personal knowledge of one case where a very reputable miller was charged by a neighboring miller with adulterating his flour with alum. The miller who was charged with this practice, knew that he used no such sophistication, and the upshot of the business was a law-suit, in which each will come out the loser. It is easy, of course, to make a charge, and often very hard to prove it, but in any case, if the person who is charged comes out the winner, there is a certain odium and more or less suspicion attached to him afterwards, no matter how innocent he may have been, which may greatly injure his trade.

Now in order that each miller may be able to make his own test with as much scientific accuracy and precision as the best chemist, we submit the following methods to the observation and study of all, with the belief that they will be of practical advantage.

The detection of alum in flour is quite simple, for we have, by the chloroform process, a method of separating nearly all the alum added as alum; therefore the following remarks may apply chiefly to bread, although flour may be used in the experiments as being more convenient.

The logwood test, as usually applied to bread or flour, is wanting, both in delicacy and sharpness, and this is especially the case when only small quantities of alum are present. Whether the colored bread is dried or undried, it often happens that of two equally good observers the one calls a sample thus colored, dirty pink, and the other blue pink. Knowing the power that gelatine possesses, of uniting with alum, the property may be very successfully utilized. If an experiment be made with gelatine and pure solution of alum, by digesting a few slips of gelatine in a solution of alum for twelve hours, and the strength of the solution be then ascertained, the alum will be found to have added considerably to the gelatine, so that gelatine will withdraw and concentrate a considerable percentage of alum from a solution, often as much as twenty per cent.

Many eminent chemists claim that when alum is added to flour, whether in powder or solution, and the flour is made into bread, that the alum ceases to exist as alum, but becomes phosphate of alumina which is the form in which alum appears in the ash, but it is an open question whether it is formed in the bread or not. Take an aqueous extract of flour, filter it by the aid of a pressure pump and add a little solution of alum, there is no precipitate; add a little phosphate of soda or potash, and a cloud is immediately perceived. Although phosphate of potash is found in the ash obtained by evaporating down to dryness, and incinerating the aqueous extract, the behavior with solution of alum would render one doubtful of the existence of an alkaline phosphate in the watery extract were there not a simple explanation which is this, that phosphate of alumina is not fully thrown down from its solutions by an alkaline phosphate, except by an excess of that phosphate, so that it all depends as to the quantity of alum added whether it is likely to be in the state of phosphate or not.

Again if the alum is all converted into phosphate of alumina, it could hardly be washed out of bread or flour by water. Professor Blythe, of Dublin, M. R. C. S. I., made some experiments on the detection of alum in flour and bread which we are able to lay before our readers. They were conducted with the utmost care, and from the well known standing of the gentleman, as professor of chemistry in the Queen's university, they may be regarded as thoroughly reliable. The first experiment made was with 20 parts of alum, 3,500 parts of flour, and 28,000 parts of water which were mixed together, and the whole set aside for 72 hours. The flour as usual settled to the bottom, leaving a clear supernatant fluid. A fractional portion of this clear fluid was decanted, a little sodic phosphate added, and the liquid boiled slowly down to dryness in a platinum dish incinerating, and the phosphate of alumina separated and determined in the way familiar to all chemists. The amount of alumina phosphate calculated on the whole as alum was 2.55 parts or 12.7 per cent of the alum originally added. Hence in this experiment, in which the proportion of water to alum was as 1,400 is to 1, over 12 per cent of the original alum was recovered.

The next experiment was with three loaves of bread which we will designate as A, B and C. They were made with a flour which was proved to be pure. Definite quantities of alum were added to two of the loaves; the third was made of the pure flour. A, 5 parts alum, 8,438 parts of flour; B, 5 parts alum, 3,503 parts of flour; C, flour, 7,545 parts. In the A loaf the alum was added to the flour in powder and mixed dry with the flour. In the B loaf the alum was added in solution. The loaves were fermented and baked in the usual way. Then the three loaves were cut into small pieces and soaked in three separate jars, each jar containing 49,000 parts of distilled water. After three and a half days' soaking the liquid was separated by filtration, and the residue on the filter weighed, and the necessary calculations made, so that the amount of water still adhering to the bread was known, and could be allowed for. The three filtrates were repectively evaporated to dryness after the addition of a little sodic phosphate, and the three extracts dried and incinerated, and the three ashes treated in the usual manner so as to obtain as a final result any alumina phosphate, if present. The alumina phosphate calculated on the whole as alum separated was as follows: A yielded 1,493 parts of alum, B yielded 1,454 parts of alum, C yielded no trace. In this case, then, in which the water was 9,800 times the alum, the amount recovered by simple extraction with cold water was about 29 per cent.

The next test was to find the quantitative estimation of alum. If by using large bulks of water it was possible to extract a portion of the alum, it was thought highly probable that by using a more powerful solvent, and especially one in which any aluminic phosphate would be dissolved, most if not all of the alum would be dissolved. It was also a question whether by this means there could not be devised a method to distinguish between alumina added as alum and alumina present as silicate of alumina. Kaolins, composed of silicates of alumina with other silicates, were taken and digested in 5 per cent hydrochloric acid in the cold, but no alumina was found in the solution. Even a 35 per cent hydrochloric acid, acting for 24 hours in the cold, failed to decompose the silicate of alumina. On the other hand, London clay was acted on by 5 per cent hydrochloric acid, and parted with much iron and a minute quantity of phosphate of alumina. This is possibly derived not from a decomposition of a silicate, but a mere solution of a pre-existing phosphate of alumina.

The next experiment was with bread. Five commercial loaves of bread from various sources, none of which gave any reaction with the logwood test, were severally crumbled and digested with a large quantity of 5 per cent hydrochloric acid. The acid liquid was poured off the bread, a little sodic phosphate added, and then the acid was neutralized with ammonia, and the liquids boiled down to dryness in a platinum dish, the extract incinerated, etc., but none of the five yielded to the ordinary analytical methods the least trace of phosphate of alumina.

A sample of pure flour was next taken and divided into three parts. The three flours were then mixed as follows: No. 1, alum 10, flour 1,750 parts; No. 2, alum 10, kaolin 10, flour 1,750 parts; No. 3, kaolin 10, magnesia 10, flour 1,750 parts. The flour thus prepared was made up into three loaves. The three loaves were finally each treated in the cold with 12,250 parts of 5 per cent hydrochloric acid acting for 24 hours. Two-thirds of the whole quantity was decanted off; one-third remained with the bread. From No. 1, 95.8 per cent of the alum added was recovered as phosphate of alumina. From No. 2, 99 per cent, that is, of course, calculated on the whole. The difference between the two determinations was considered to be due to loss, considerable spluttering occurring toward the end of the operation. No. 3, though containing silicate of alumina added in the form of kaolin, yielded no alumina phosphate. Other experiments have been made and are still proceeding, and so far they tend to substantiate the hydrochloric process as superior to the old burning up methods in which a correction has to be made for the silica. Although, thanks to the researches of Dr. Dupré, followed by those of Mr. Carter Bell, the proportion of silica to alumina must be considered as well established as the nature of the thing permits, yet this correction no one can call perfectly satisfactory.

In a communication to the present writer on the subject, the professor says:

"In publishing the first results of my experiments I did not mention a recent case in which a difference of opinion between myself and Professor Bell had arisen. It was subsequently published in the *Freeman*, a copy of which I also send to you. A sample of bread which gave both by the old fashioned method of applying logwood a pronounced blue, and also by the gelatine method an almost cobalt blue, and finally from which sufficient alum was extracted by water, out of 250 grains, to color blue the gelatine slip No. 5, and in which I found, after allowing 12 grains of alum for 12 grains of silica (for I had not worked at that time sufficiently the hydrochloric acid process) I returned as containing nearly 19 grains of alum to the 4 pound loaf. Now, 19 grains is not much, but it is most decidedly a quantity that, having done so much work in the subject, I was not likely to make a mistake as to *the presence* of alum. Professor Bell, however, could not find any alum in the sample which he tested, but the probability is he did not pay very much attention to his experiments, and no chemist should give an opinion without full details of operations and the reasons for conclusions."

Many such experiments have been made, both in Europe and this country within the past five years, and we deem the subject of sufficient importance to millers to give every experiment made in search of adulteration, so that experiments can be readily made at any time by a person of ordinary intelligence.

SPECIAL NOTICES.

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A first class miller, sober, industrious, reliable and up to the times. Best of references. Correspondence solicited. Address P. O. Box 27, Kossuth, Ia.

A RARE CHANCE.

A water power custom flour and saw mill, excellently located, for sale at a bargain. Address, N. W., care of NORTHWESTERN MILLER, Minneapolis, Minn.

WANTED.

Roller flour mill; to rent preferred, or might buy. Capacity about 100 barrels daily. Water power must be never failing. Address box 544, Lindsay, Ontario, Canada.

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Second hand engine for sale at a bargain. Cylinder 14x24, in excellent condition. Can deliver it immediately. For further information address BIRD, BRIDGE & Co., Warren, Jo Daviess Co., Ill.

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At half price of new, two of Jonathan Mills' degerminators; run only about 5 months, all perfect in every respect. Reason for selling, prefer rolls in place of them. UNION MILL CO., Waterloo, Ia.

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One Kurth cockle mill, 50 to 75 bushels, good as new. Parties in need of such a mill will do well to correspond with KAERCHER & PFEFFER, Ortonville, Minn.

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Five run of four foot buhrs, and one extra runner, extra selected stock, dressed and in good running order with spindles, lighter, screws etc.; one 30½ inch Leffel turbine in perfect order; pair of smooth rolls.
Address VICTOR, (this office.)

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Cheap for cash, one No. 2. Richmond Empire conical bran duster. Capacity—offal from 150 barrels. Run about four months and in perfect condition. Taken out to be replaced with a larger machine of same make. Address WALSH, DEROO & Co., Holland, Mich.

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The Richfield mill, five miles south of Minneapolis, on Lyndale ave. Will sell whole or half interest, taking city property in part payment. Capacity of mill 60 to 70 bbls. Good water power; also pair 4-foot buhrs in good shape for sale. J. M. BAIRD & Co., Box 688, Minneapolis, Minn.

WANTED.

Young man two and one-half years as correspondent and amanuensis with one of the largest milling companies in this country, is open for engagement in a like capacity. Can give best references. Fully conversant with the export trade, and general routine office work. Address A. B., this office.

FOR SALE.

A wind mill, tower 75 feet high, well built, together with all of the iron and nearly all of the woodwork belonging to a wind wheel 60 feet in diameter, shafting, belting, smutter, and nearly everything complete for a two-run flouring mill, is offered at a great bargain. For any one in need of this machinery it is a perfect bonanza. Address for particulars, ED. A. PASADES, Plainview, Minn.

FOR SALE.

Custom and feed mill. The undersigned offers for sale the undivided half interest in the custom and feed mill at South Boardman, Kalkaska county, Mich., on the Grand Rapids & Indiana railroad. The mill is doing a large business in custom work, and the feed trade is unexcelled. Mill is nearly new and in good codition. Address, W. H. LEACH, South Boardman, Mich.

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By R. James Abernathy. The most modern book on milling. Three hundred octavo pages, fully illustrated, and containing full accounts of modern milling methods, together with many valuable tables and much useful information for mill owners, millers and millwrights. A book everyone interested in milling should have. Price $4. Sent postpaid on receipt of price, with one year's subscription to the NORTHWESTERN MILLER, $4. Address,
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A man whose extensive experience in milling as a practical miller and more recent experience as a mill planner and builder entitle him to the claim of being an expert in modern milling, desires to correspond with millers who have capital and location, with a view to partnership. None but first class parties who want first class results need answer. Would prefer to build new mill, so as to take full advantage of the latest developments. Please address for all particulars, No. 33, care NORTHWESTERN MILLER.

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If you have any scientific, technical, reference or standard books, newspaper or magazine files, etc., suitable for a large general library which you want to dispose of for cash at a low price, send full description and price to the undersigned and you will receive a reply by return of mail. Old and rare, or modern engravings of merit are also wanted on the same terms. Address
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WANTED.

Steady situation by a practical miller—sober, industrious and reliable. Had 25 years' experience with millstones and rollers. Am competent to build, remodel and run any kind of flouring mill. Have built the mill I am working at present, and made it pay the outlay. Gilt-edged references from present employers. Good reason for wanting to change. Would not object to go with a millfurnishing house as traveling man. A good mill in Iowa preferred. Address "SLATER," NORTHWESTERN MILLER, Minneapolis, Minn.

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Parties intending to build a mill read and think this over The entire machinery of an 80 barrel mill, as good as new, consisting of engine, 14x24 boiler, tubular 65 horse-power, 2 steam pumps, 2 power pumps, 3 runs of stones with all their gearing (bevel), 2 sets of rolls, 2 packers, 1 diamond dresser, 6 reels, 1 double Smith purifier, largest size made, 1 French purifier, 2 smutters, one brush scourer, rolling screen and magnets with two sets of scales and 24 picks, all gearing, shafting, and belting, large 200 bus. per hour corn sheller, and one small corn sheller. Everything in perfect order, and will be taken down carefully and put on cars for $3,000.
Address No. 9, care NORTHWESTERN MILLER.

$10,000 WORTH OF PROPERTY FOR $5,500.

Flour, grist, and saw mill, situated on the Meherrin river, 10 miles from Keysville depot, R. & D. railroad, Va. Since 1873 the proprietor has spent $7 000 on improvements, new machinery, etc., and there is enough of machinery not in use to build another mill, including a pair of 5 foot wheat buhrs. There is a miller's house, store house, wheelwright's shop, etc., besides 50 acres of fine river land. The proprietor being now engaged in a different business in the city of Petersburg cannot give the mill his attention, hence would make a large sacrifice to sell. Total value, $10,000. Part of the purchase money could remain at interest on security of the property, and liberal terms given. Address D. BUCHANAN, Goldsmith, Petersburg, Va.

NEW MILL FOR RENT.

A new four-run steam flouring mill for rent at low figures at Conway, Ia. No other mill within ten miles. The mill is complete from top to bottom. Basement, three stories and attic; 14x20 engine; boiler 54 inches by 14 feet. Iron husk frame, belt drive, two buhrs on wheat, one on middlings and one on corn. One smooth roll on cut-off from purifier, and a corrugated roll on bran. No. 3 smut purifier with dust catcher. Six 18-foot reels with double conveyors. Plenty of cleaners and exhaust fans. Flour packer. Four sets of scales. In short, the most complete and finest finished four-run mill in Iowa. None but a good miller, with means, need apply. Address C. A. Donnell & Co., Conway, Ia.

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We are making an exclusive business of the sale and exchange of mill property, and so far as we know are the only firm in the country giving entire time to this matter. Persistent, judicious advertising and vigilance, coupled with experience, give us facilities for finding buyers unequaled by any concern in the country. We offer the largest number of good chances in all the western states and Canadas, so that buyers looking for locations should consult us. Send for latest list of steam and water power mills for sale and exchange all over the west.

J. M. MOORE, & CO.,
213 North Eighth Street, St. Louis.

TRADE TALK.

This column is open to all regular subscribers to the Northwestern Miller, and all questions will be answered by competent practical millers at the publisher's expense. Unless signed by the editor, all matter published is given as the expression of individual opinion, for which the Northwestern Miller assumes no responsibility. Subscribers asking questions or criticising matter appearing here or elsewhere in the Northwestern Miller, may use initials or such signatures as they may select, but every letter must be accompanied by the full name of the writer, as only bona fide communications will be printed. The fullest criticism of anything and everything appearing in the paper, in this department or elsewhere, is invited.

J. A. C. "I drive my machinery with belting. I find some difficulty in preventing it from slipping. Will some of your correspondents give me a method to prevent this?" The belt is driven and drives by the friction between itself and the pulley. This friction is due to the tightness of the belt and its quality. An elastic belt is better than a hard dry one, and will do more work. Many recommend rubber for the surface of a pulley, but it does not wear well unless canvass is introduced to give it strength to resist the pull of the belt. This kind of a cover is made with alternate layers of the best elastic rubber and canvass—four layers of rubber to three of canvass. The canvass is cut straight so as to give it the greatest strength with the least material. The cover is made from two to six inches wide, and on one edge is a slip of one ply canvass, one-half inch wide; and on the other a rebate that the lip will fill when the cover is wound spirally around the pulley. This lip and rebate are to join the cover together across the face of the pulley by cementing and driving small copper nails through them both that clinch when the points touch the face of the pulley, so that the cover is as a whole one. One end of this cover is riveted to the pulley, and wound spirally on until the whole face is covered, and the other end is riveted. This method, it is said, gives great satisfaction. Various other means have been devised to avoid slipping of belts, and one of them was to strew powdered rosin or pitch on the inside of the belt. Another was to cover the pulleys with wood, and a third was to give the rim of the pulley a curved surface. These means are only palliatives, however, and lack a thorough, steady and continued action. Rosin and pitch are soon pressed into the leather, when they not only lose their efficiency, but contribute to the rotting and destruction of belts. A wood covering on the pulley gets polished in a short time, and is then as slippery as iron. It is therefore necessary to frequently roughen its surface by which operation the diameter of the pulley is diminished and the proportions of the transmission are altered. A convexity of the rim of the pulley is very effective to prevent the dropping off of the belt, especially when the pulley has a horizontal position; but it counteracts the slipping of the belt to but a very small extent. It is said that leather covering is much better than wood. As the friction of leather on leather is five times that of leather on iron, and as leather can be roughened and easily kept in that condition, it is evident that very little slipping can take place on pulleys covered with leather. Not even when the belts have to transmit the very highest amount of power. For pulleys running with great velocity that have to transmit great power, this leather covering will be found highly advantageous, and besides this, a leather covering preserves the belt, and it does not require to be tightened so hard, the friction being considerably increased, and in the second place because there is no occasion for a rapid rotting. This rapid rotting is generally caused by the fact that under the influence of the heat produced by friction, the tannic and other acids contained in the leather of the belts, combine chemically with some of the iron of the pulleys, forming a hard compound in the belts, which produces what is called rottenness, and frequently causes breakages. This evil is of course avoided by covering the pulleys with leather. The leather can be fixed by a kind of paste or glue, which hardens in a short time so that the greatest force can be transmitted by the pulley without loosening the leather. Covering the pulley with leather is a very simple operation. The assertion is made by Cooper and others that any belt running upon two pulleys, one the driver and the other the driven, must slip on both when a large amount of power has to be transmitted. An authority on belting asserts that if a belt is passing from a state of greater to one of lesser tension or *vice versa* in its passage around a pulley, in the former case it must undergo contraction, and in the latter case extension, in direction of its length; and as a belt always exists in a different state of tension in the parts entering upon and leaving the given pulley, if then, in passing around the driving pulley, a belt undergoes contraction, and on the driven pulley extension, there can be no point of the belt but must have a sliding movement on both pulleys, and thus result in the driven pulley having a lower velocity than would be mathematically due to the diameter of the pulley. Thus in two pulleys of exactly equal diameter, one driving and the other driven, the latter must have the lower velocity. Let us suppose two corresponding pulleys of the same diameter in motion at a moderate velocity. In case the tension of the belt is sufficiently great, and the pulleys not too small, it may be difficult at first to perceive the slipping of the belt, but if the rotations of both the pulley and the belt are counted, a difference in their number will, in nearly all cases, be discovered, the belt performing a less number of rotations than the pulley. We thus become aware of the fact that the belt slips on the smooth surface of the pulley owing to the fact that the power sought to be transmitted by the belt is greater than the friction of the leather upon the iron, and that this power overcomes the friction more or less slowly according to the circumstances of the case. The velocity and diameter of the pulleys must be taken into account, for the friction is more easily surmounted at a rapid velocity than a slow one. And pulleys of large diameter offer the belt more surface, and this increases the friction. The consequent sliding of the belt takes place the more easily the greater the velocity of the periphery of the pulley, and power to be transmitted on the one hand, and the smaller the diameter and breadth of the drum or pulley on the other. Printer's ink has been recommended as a means of preventing belts from slipping. The belt should hug the pulley as close as possible. Neatsfoot oil and a little rosin has been found useful to soften a belt, but castor oil and glycerine are decidedly the best.

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R. I. C. "I would like to see the rules published in your very valuable journal for ascertaining the speed of pulleys." Multiply the diameter of a pulley by the speed of the same pulley, and the product divided by the diameter of another pulley belted to or from it—will give the speed of the other pulley—or if divided by the speed, will give the diameter. We give four illustrations. 1. The pulley of a mill is 10 inches diameter. We want to drive it 450 revolutions a minute. The diameter of pulley on engine shaft—or countershaft (as the case may be,) that drives the mill, is 30 inches. How fast should this 30 inch pulley (that drives the mill) run?—Answer: 150 revolutions. Viz: Diameter of mill pulley, (10) multiplied by speed of mill pulley (450), divided by the diameter of pulley driving the mill (30), equal $4500 \div 30 = 150$, speed of pulley driving the mill. 2. The pulley of a mill is 10 inches diameter. We want to drive it 450 revolutions a minute. The speed of the pulley on engine shaft—or countershaft (as the case may be,) that drives the mill, is 150 revolutions. What diameter should this pulley be that runs 150 revolutions?—Answer: 30 inches diameter. Viz: Diameter of mill pulley (10), multiplied by speed of mill pulley (450), divided by speed of pulley driving the mill, equals $4500 \div 150 = 30$, diameter of pulley driving the mill. 3. The pulley on engine shaft—or countershaft (as the case may be,) that drives the mill, is 30 inches diameter—and its speed is 150 revolutions a minute. The pulley on the mill is 10 inches diameter. How fast will the mill run?—Answer: 450 revolutions per minute. Viz: Diameter of driving pulley (30), multiplied by speed of driving pulley (150), divided by diameter of mill pulley (10 in.) equals $4500 \div 10 = 450$, speed of mill pulley. 4. The pulley on engine shaft—or countershaft (as the case may be,) that drives the mill, is 30 inches diameter, and its speed is a 150 revolutions a minute. The pulley on the mill should run 450 revolutions per minute. What size pulley should be on the mill?—Answer, 10 inches diameter. Viz: Diameter of driving pulley (30), multiplied by speed of driving pulley (150), divided by speed of mill pulley (450), equals $4500 \div 450 = 10$, diameter of mill pulley. Remember to multiply the speed and diameter of the same pulley.

***

William Emerson, La Porte City, Ia. Mr. J. J. Girard, Minneapolis, says in your paper of June 1: 'Billy should have looked my prize article to problem 1 over more carefully before rushing into print.' I suppose he has reference to my criticism, and as I was called Billy when a boy learning my trade, I will answer to it now. However, I want to inform Mr. Girard I had a perfect knowledge of what I was writing about when I rushed into print, if I did not notice exactly what No. 2 stone was to grind besides low grade stock. What I said in regard to taking bakers' from No. 2 stone has nothing to do with the case, as I traced low grade stock all right according to his plan. It makes no difference whether you grind that germ bran from tail of No. 1 centrifugal on No. 2 stone or No. 3 stone; it goes to one or the other, as I said, so I consider the hole he is trying to crawl out at, rather too small. I spoke from experience when I said he could have made a perfect finish over tail of No. 1 centrifugal, for I have tried it on hard spring and soft spring and winter wheats. In regard to low grade arrangement being all right for small custom mills in Iowa, all the mills are not small custom mills any more than they are in Minnesota. I would also refer him to conditions of problem No. 1, where it says Mr. Shortcrop was running under the disadvantage of grinding poor wheat; also where it says i was to be for winter or spring wheat. Now Mr. J. B. says mills in Iowa take stock to low grade that we would run to bakers'. I don't know where Mr. Shortcrop's mill is, but it evidently is not very near Minneapolis. Iowa millers take stock to low grade according to the quality of their wheat, to keep the grade to suit the market, and I think they know what a finish is and how to finish, but know better than to grind germ bran after it has been finished, to make their yield loom up at the expense of spoiling the whole product and making it worthless as far as selling for flour is concerned. In regard to conditions in problem 1, none of the competitors complied with the conditions exactly anyway. If you had given Mr. Shortcrop just what he needed you would very likely have got left.

***

Henry G. Mo. "There is a general feeling in this country in favor of coarsely granulated flour, though, I believe, it is less pronounced than formerly. Why is this so? I understand that the Hungarian flour is in much smaller granules than that of this country Am I correct in this? What numbers of cloth do they generally use for flour? For actual baking purposes which is the best, coarse or fine flour? and why?" This inquiry has been referred to Mr. Oscar Tresselt.

An Old Mill in Washington Territory.

A correspondent of the Portland *Oregonian*, making a trip on horseback, describes a quaint old mill near Chewelah, Wash. Ty., as follows:

After two hours riding we arrived at Oppenheimer's flouring mill, of which we had heard every one in the valley speak, and which even the Chicago (?) of the Pacific coast, Spokane Falls, gives credit for turning out better flour than can be purchased in Walla Walla. It is a quaint looking old building, made principally of logs, and stands in a little corner against the mountain on the bank of the Calispell river. Going inside, the first thing that attracts one's attention is the total absence of that creaking noise and jarring peculiar to all other mills. Not a single piece of iron shafting, no iron pulleys, connecting rods or gearing of any kind can be seen. Everything is made of wood. The shafts and pulleys are large cumbrous looking things, but run easily and without the least noise, and, with an old turbine water wheel, were all made by hand, from timber cut on the hillside. Every one of the millstones was taken from a bed of granite on the neighboring hill. It has a capacity of about thirty barrels per day, although it is seldom called upon to turn out that amount. D. H. Ferguson & Co., first built the mill in 1857 and run it until about two years ago. From the miller's estimate there was about 20,000 bushels of wheat raised in the valley last year, and he thinks this year's crop will be at least double that. The Calispell river, which furnishes power for the mill, takes its origin in Calispell lake, sometimes known as the Little Pend d'Oreille lake, and empties into the Calville river a few miles below the mill. It has never been known to fail, and, as a rule, furnishes too much water, which goes to waste over the flood gates. This stream, for a few miles above the mill up to its source, is a fisherman's perfect paradise, swarming with both lake and brook trout.

SHORTS.

Horse power and laboring force are synonymous, and motion is produced by the continued exertion of pressure, so that laboring force is something more than mere pressure. It is something that produces an effect which can be measured.

*

In order to determine the value of laboring force, the common measure of laboring force must be established for which we may take a given weight, raised through a given space. One pound raised one foot high is the general and most convenient measure, as the dynamical unit of laboring force, and varies proportionately as the space through which the resistance has to be overcome.

*

The condition of a standing balance is, that the movements of the weights carried by the axis should neutralize each other, and the condition of a running balance is that each piece shall have a counter-balance of equal *vis viva*.

*

Vis viva means the quantity obtained by multiplying the weight of a moving body by the square of its velocity.

*

The condition of a standing and running balance in any revolving machine, is that each rotating mass shall have a counter-balance of equal moment, and of equal *vis viva*, so that in putting in a standing and running balance two different forces have to be dealt with.

*

As it is friction that wears out machinery, it should be the object of every miller to lessen it as much as possible by some carefully selected lubricator, and he should be guided in the selection of the lubricator by the character of the work to be done as a different lubricator should be used each for light and heavy shafting.

*

The relations of lubricants to air and iron dust are important features in their characters. Some oils dry very rapidly on exposure to air. All oils should be purified from matter that tends to increase this quality.

*

Must rarely penetrates through the husks of the wheat, and in the worst cases it does not extend through the part which lies immediately under the skin. When musty wheat is immersed in hot water all the decayed grains swim on the surface, so that the remaining wheat is effectually freed from the unsound grains. The wheat must afterwards be dried.

*

The object of the scalping reel is to get high ground meal into proper uniformity to bolt a clean flour on the superfine reel, which would not be so easy without it unless very fine cloths were used. The scalping reel is clothed with various numbers of cloth, ranging from 000 up No. 9. The middlings should be clear from flour going to the purifier.

*

It sometimes happens that the superfine reel won't bolt so well without bran, and as coarse bran never specks the flour like fine bran and as that has gone to the purifier with the middlings it will be safe to put all the bran that passes over the tail of the scalping reel into the superfine bolt.

*

If the same lubricator was used for fine steel journals running in metal boxes as for cast iron journals running in wooden boxes there would be a great mistake made.

"Perfection"

HIGHEST TEST, 85% LOWEST, 82%

This water wheel is now admitted by the best mill owners to be

THE MOST PERFECT IN THE MARKET.

MARK! IT NEEDS NO PENSTOCK

And thereby saves its cost two times over, besides having it where it can be seen and got at.

The best and largest and richest mills have adopted it. 100 wheels sold in 1881, 200 sold in 1882, 400 will be sold in 1883. Just think of it, 300 wheels in two summers. It must be a good one to sell so fast. Send for elegant new book.

C. RIDGWAY & SON, Coatesville, Penn.

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FORGES, TOOLS, &c.

BEST FORGE MADE FOR LIGHT WORK, $10. 40 lb. Anvil and Kit of Tools, $10. Farmers save time and money doing odd jobs. Blowers, Anvils, Vices & Other Articles AT LOWEST PRICES, WHOLESALE & RETAIL.

CLARK'S RUBBER WHEELS.

THIS WHEEL is unrivaled in the world for durability, simplicity and cheapness. Adapted for Warehouse and Platform Trucks, Scales, Heavy Castors and all purposes for which wheels are used. Circulars and Price List free. GEO. P. CLARK,

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Picks will be sent on 30 or 60 days' trial, to any responsible miller in the United States or Canada, and if not superior in every respect to any other pick made in this or any other country, there will be no charge, and I will pay all express charges to and from Chicago. All my picks are made of a special steel, which is *manufactured expressly for me* at Sheffield, England. My customers can thus be assured of a good article, and share with me the profits of direct importation. References furnished from every state and territory in the United States and Canada. Send for circular and price list.

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Calls the attention of mill owners and mill men generally to his unrivalled mode of manufacturing and dressing

MILL PICKS

After long experience in the business ***Can guarantee perfect satisfaction.*** A large assortment of picks on hand. All orders promptly attended to.

510 and St. South, MINNEAPOLIS, MINN.

Magnetic Grain Separators.

Absolutely perpetual, cheap, and sold on their merits after thirty days' trial. Awarded first prize at Cincinnati Exhibition by a committee of experts. Send for circulars.

WESTERN MAGNET CO., Delavan, Ill.

CROCKER, PELL & BOARDMAN,

Engine and Machine Works.

NEW TOOLS, NEW PATTERNS.

Shafting Pulleys, Couplings, Hangers and General Mill Machinery kept in stock.

Special attention paid to

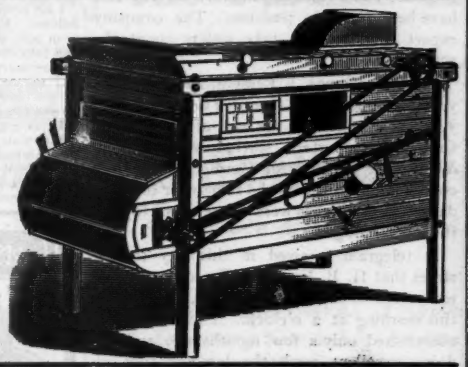
FLOUR MILL MACHINERY

AUTOMATIC CUT OFF and Common Slide Valve ENGINES of the most modern approved designs.

Estimates furnished upon application.

11th Avenue and 4th Street South, - - Minneapolis, Minn.

Rollins' Newly Improved FRENCH MIDDLINGS PURIFIER,



Has as much capacity and is warranted to do as much and as good work as the No. 0 machine of any other make.

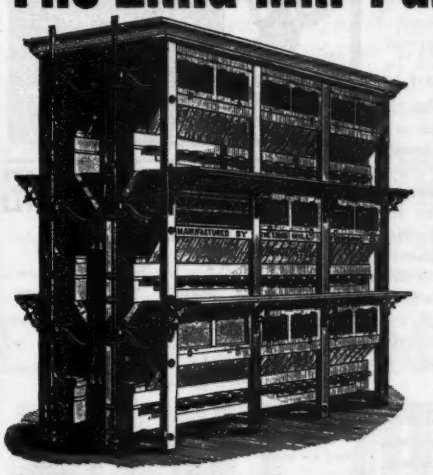
It is fully Licensed under the Smith and all Conflicting Patents.

Send for new catalogue containing full particulars and names of users in almost every State and Territory.

CHAS. G. ROLLINS,

Minneapolis, Minn., U. S. A.

The Lima Mill Furnishing Co.



MILL BUILDERS

Mfrs. of and Dealers in

Improved Milling Machinery

OF EVERY DESCRIPTION.

Special attention given to

BOLTING AND PURIFYING MACHINERY,

And remodeling of Old Mills on our Degerminating and Gradual Reduction System on Buhrs. Write for Circular and Price List and Special Estimates to

The Lima Mill Furnishing Company,

LIMA, OHIO.

THE LATEST! THE BEST! THE LEADER!

IN FLOUR ROLLER MILL LUBRICATION.

The Celebrated New Grease,

DUX LUBRICANT

Our Dux for Flour Roller Mills

Is a grease compound, composed of the best beef tallow, refined oils, an anti-septic and an anti-calorific. We claim that it is the most scientific grease compound for lubrication ever invented, and for durability, cleanliness, cool running and economy it has no equal. It lubricates evenly and sufficiently, and does not gum or oxidize on journals. Dux will save you from 20 to 50 (in some cases 70) per cent on lubrication. It is put up in 5 pound tin boxes, 30 pound pails, 200 pound half-barrels, and 400 pound barrels. All quantities less than a half barrel are sold at 25c. per pound: half barrel and barrel lots, 10 per cent off. Sample packages will be sent to parties wishing to give it a trial, and if not satisfactory, no charge will be made.

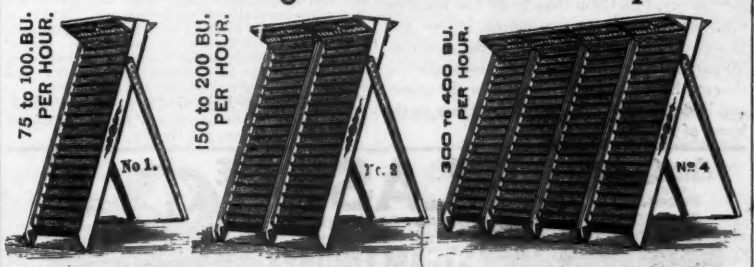
LEIB LUBRICATING CO.,

196 & 198 CHICAGO STREET, BUFFALO, N. Y.

C. H. CHADBOURN, Pres. D. H. WILLIAMS, Vice-Pres. JOHN T. LA DU, Sec. and Treas.

LA DU-KING MFG. CO., MANUFACTURERS OF THE

King Cockle Mill & Seed Separator



This separator is now coming into general use with millers as a **Grader**, and is giving universal satisfaction—its cheapness, perfect working, and capacity being unequaled by any other separator in the market. By running this separator ahead of your Kurth machine, you can reduce the volume of wheat 75 per cent (or about that) for the Kurth. This separator gives you 75 per cent of the largest wheat, free from cockle and ready for the rolls, and 25 per cent of the volume of wheat and cockle for the Kurth. This will increase your Kurth capacity about three times, and also give you two sizes of wheat for first break. You can do this all at one run and without extra power. For circulars and information, write

THE LA DU-KING MFG. CO., Rochester, Minn.; THE LA DU-KING MFG. CO., Toronto, Canada.

C. CADLE, Mill Furnisher, Sole Agent for Europe, 39 Wellington Quay, DUBLIN, Ireland.

HOW TO KEEP BOILERS CLEAN
FREE Book. Jas. F. Hotchkiss, 84 John St. N.Y.

Oak Leather Belting

OF SUPERIOR QUALITY,

HARDWARE,

Mill Supplies

MILLER BROTHERS,

304 & 306 Hennepin, Ave. Minneapolis, Minn.

G. O. FOSS. J. C. PATTERSON.

FOSS & PATTERSON,

Civil and Hydraulic Engineers

Plans for dams and improvement of water power.

Room 33, Boston Block,

Cor. Hennepin Ave. and Third St., MINNEAPOLIS.

THE INK

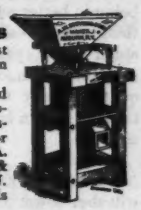
WITH WHICH THIS PAPER IS PRINTED IS MADE BY THE

QUEEN CITY PRINTING INK Co

CINCINNATI, O.

STEVENS' FRENCH BUHR

Feed Mills



The cheapest and best mills in the world.

Prices $80 and upwards, subject to cash discount. Send for circulars to A. W. Stevens & Son, Auburn, N. Y. Mention this paper.

"MOORE COUNTY GRIT"

Corn-Mills and Millstones,

ALL SIZES.

THE BEST IN THE WORLD FOR TABLE MEAL!

Samples of Meal Sent on Application.

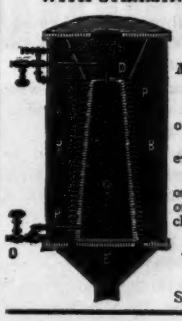
NORTH CAROLINA MILLSTONE CO.

Chambersburg, Pa.

(Please Mention this Paper.)

WELCH'S WHEAT HEATER!

WITH STEAMING ATTACHMENT.



FIRST PREMIUM

—AT—

Millers' International Exhibition

Its superiority over a others fully established.

Heats every grain of wheat evenly and thoroughly.

We guarantee satisfaction or no sale, and invite a trial of 30 days to prove our claims.

A. B. BOWMAN,

800 North 2nd St.

ST. LOUIS, MO., U. S. A.

SAVE BOILER AND FUEL!

LYE & ZIMERLE'S

IMPROVED

Anti Incrustation Compound!

For Steam Boilers is warranted to do all we claim for it—if used as per directions—viz: Stop formation of scales and gradually bring out the old; **prevent foaming** and gritty matter being carried into the cylinder to cause its cutting. It is second to none.

ALL STEAM USERS NEED IT.

Price reduced to 50 cents per gallon in barrels, half barrels and quarter barrels. Correspondence solicited and references furnished. Please give diameter and length of boiler, well or river water and kind of mineral as nearly as possible. Address,

LYE & ZIMERLE, Delphos, Ohio.

BURNHAM'S

Standard Turbine

Water Wheel.

Over 2,000 sold the past eight years. New illustrated and descriptive pamphlet sent free by

BURNHAM BROTHERS,

YORK, PA.

ST. LOUIS SIFTINGS.

[SPECIAL CORRESPONDENCE.]

The prospects of our mills are not as cheerful this week as they have been during the past three or four, and we cannot note any increased activity among them, while the continued weakness of the flour market does not tend to help matters to any great extent. The general attraction at present seems to be centered on the coming crop, and the air is filled with predictions and statistics. On every hand one hears a different report, and every miller has his own version as to the outcome of the farmers' fall labor. Telegraphic reports are received here daily, and we note one received from Columbus, O., dated June 7, which states that advices based on the reports of 1,020 townships to the Ohio board of agriculture, gives the percentage on June 1, compared with the conditions same date 1882, as 52 per cent, or 23,250,000, against 45,000,000 bushels. Local reports hereabouts still continue discouraging, but they are mostly from Illinois. Market rather quiet and offerings small. Values unsettled and in a nervous condition. Consumptive demand restricted itself to choice milling qualities alone, and the offerings proved ample. Stocks have been reduced 107,000 bushels, and rail shipments east show an increase of 99,000 bushels.

Flour market decidedly inactive and values have softened somewhat in sympathy with wheat. For sometime past the demand was chiefly for the higher grades, fancy being in better and firmer request than anything else. Values show an average loss of about 10 cts. per barrel, and sales averaged only about 2,400 barrels per day. Prices quoted to-day were: Patents, $6.50@7.40; favorite known brands, $6@6.30; fancy, $5.60@6.

***

Chouteau & Edwards' Mill a Waterloo is still shut down.

The enlarged Planet mill will add 13 of Geo. T. Smith's middlings purifiers.

Jas. W. Schutz, with Willford & Northway, Minneapolis, Minn., was in town this week.

The Crown Roller, of Belleville, has shut down, owing to the scarcity of wheat in its section.

The Kehlor Milling Co., will add three centrifugal reels of the Geo. T. Smith make to their mill.

The Schwegman Milling Co., of Washingington, have ordered a double 9x24 Downton bran roll for their mill.

Mr. Brockmire, of Brockmire & Leiving, returned to the city Wednesday, after a sojourn in the southern states.

One hundred and fifteen cars of wheat were received here during the week ending June 8, of which 80 were No. 2 red.

I. Q. Halteman & Co. have purchased 12 purifiers and 3 centrifugal reels, from the Geo. T. Smith's Middlings Purifier Co.

W. D. Gray, Esq., of Edw. P. Allis & Co., and patentee of Gray's noiseless roller mills, was in town for a few days this week.

After a short skirmish through Kas., "Gen." C. S. Loomis, with Edw. P. Allis & Co., of Milwaukee, returned to the city last Tuesday.

The order for 11 purifiers of the Geo. P. Plant's new mill, has been placed with the Geo. T. Smith Middlings Purifier Co., of Jackson, Mich.

J. F. Littrell, southwestern agent for the Geo. T. Smith Purifier Co., returned to the city Thursday with book chack full of orders.

The Geo. T. Smith Middlings Purifier Co., of Jackson, Mich., have received an order for two purifiers from Page, Marton & Co., Topeka, Kans.

New Atlantic and the Phœnix mills still remain shut down, and it is highly probable that they will not start up before Geo. Bain returns from Europe.

Frank Kauffman, for many years the representative in New York of C. O. Stanard & Co., is now permanently located in the city with the above named firm.

The contract for the hurst frames and the iron work for the Geo. P. Plant Milling Co.'s new mill has been awarded to the Todd-Stanley Millfurnishing Co.

D. L. Dickenson, the flour broker, actuated by his well known charitable feeling, auctioned off a handsome oil painting, on the floor of the exchange, Wednesday, for the benefit of a destitute family. A handsome sum was realized.

Buckley & Rasin is the name of the new firm who have embarked as grain brokers in this city, and their long and tried experience bespeaks for them a most successful future. Mr. Rasin has been for many years connected with the well known firm of Fathy, Ewald & Co.

All of the machinery for the St. Louis Roller Repair Co., consisting of lathes, drill, presses, force machines, corrugators, grinders, boilers and engine have arrived and have been placed in position. The company expect to be ready to take orders about the 15th inst.

Herr Constance J. Peipens, for thirty-five years a resident of this city and for several years a member of the firm of A. Reuss & Co., flour exporters, started with his wife Wednesday evening for Germany, where the couple intend to spend the remainder of their days. Many friends were at the depot to wish them *bon voyage*.

A telegram received in this city to-day, states that H. B. Eggers' roller mill at Maremec, a few miles west of this city, burnt down this morning at 2 o'clock. The mill was reconstructed only a few months ago and was doing excellent work, the loss will foot up about $40,000, which included the elevator. Insurance about $22,000. The mill has been running only in day-time and the cause of the fire is unknown.

The "longs" and "shorts" of the flour corner have arranged for a base ball match between themselves on the 15th inst., and from appearances we would surmise that for the spectators a show will be presented that will discount Barnum, while for the participants the tortures of an inquisition are as a picnic to those which they will be obliged to endure. A subscription list was opened to-day for the purpose of raising funds for the expectant widows and orphans, also to buy liniments, splints, old rye and other necessary items. Knowing ones predict that the score will be about 97 to 68 in favor of the "longs," and that the game will be finished early on the morning of the 16th. CARRERAS.

St. Louis, June 10.

The grain warehouse of Douglas, Stewart & Frost, on Sixteenth st., in Chicago, was burned Saturday morning. Loss $100,000; insured for $60,000.

Cooper's Chips.

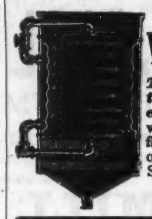
The Hennepin Barrel Co., has added a new safe to its office.

The Hall & Dann shops are working about 250 men, turning out 3,000 barrels per day.

Jas. Kennedy's shop on Maine street, east side, furnishes the Phœnix mill with barrels, and employs ten men.

The Co-Operative company on Sixth street are running the same as last week, working about 90 men. They have been fortunate enough to be furnishing mills which have run quite steadily, and as a consequence have themselves enjoyed much steadier work during the season than some of the other shops.

John Bittner, Jr., 15 years old, had a hearing on the 8th, beford Mayor Lord, of Riverside, O., for arson, being charged with burning the Debus cooperage works in April, 1882, entailing a loss of $100,000. Two witnesses testified that the boy, who was employed in the factory, told them that he set the place on fire; that he made two attempts before and two since; that his object was to get a rest. Mayor Lord, upon the conclusion of the testimony, held the boy to answer for the crime, and in default of $500 bail he was sent to the house of refuge.



Gratiot's Improved

WHEAT HEATER!

Thoroughly and properly toughens the bran on the ***hardest*** or ***driest*** wheat; heats the wheat ***evenly*** and improves the flour and milling generally, as no other Heater in the market does. Send for Circular.

GRATIOT BROS., PLATTEVILLE, WIS.

C. A. SELEY.

CONSULTING ENGINEER.

ROOM 16, DRAKE BLOCK, ST. PAUL, MINNESOTA.

I am prepared to contract for engineering work as follows: Furnish and set up power plants, complete or in part, set up machinery, pumps, water works, etc., and take charge of repairs.

Stationary, locomotive and marine engines indicated and adjusted for highest economy and work. Will conduct fuel and engine tests; design engines and special machinery. General draughting and engineering.

If you are burning too much fuel; if you wish to increase your power without great expense; if you wish power measured for renting or experiments; in short, any item of engineering work will be promptly attended to. Work done under guarantee when desired. Correspondence solicited.

KEY CITY TURBINE

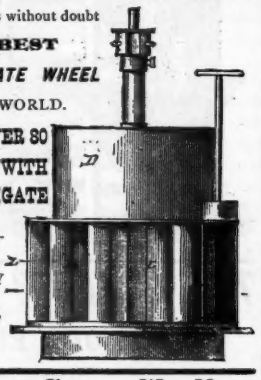
This Turbine is without doubt

THE BEST

PARTIAL GATE WHEEL

IN THE WORLD.

IT GIVES OVER 80 PER CENT. WITH ONE-FOURTH GATE



Send for circular.

MANUF'D BY

M.D.GROW,

DUBUQUE, IA.

Monitor Corn Sheller.

Pat'd Aug. 20, '72.

CAPACITY,

800 to 1,000 Bu.

In Ten Hours.

Speed, 500 to 600 revolutions per minute.

Superior to all other shellers in simplicity, durability and effectiveness in working. Runs with less power than any other sheller of equal capacity. Cleans the corn from the chaff, shells without breaking the cob, and will work with damp corn as well as dry. Cap be adjusted to different sizes of corn ears without stopping the machine. Two styles made, geared, and not geared. Write for circulars and particulars.

SELLEW & POPPLE, Dunkirk, N. Y., U. S. A.

Mannfacturers of Standard and Automatic Cut-off Engines, Boilers and General Machinery.

F. B. MILLS. S. S. LINTON.

MILLS & LINTON,

COMMISSION MERCHANTS

And Dealers in Grain, Flour and Feed

Room 6, Chamber of Commerce Building, Minneapolis.

Special attention given to filling orders for choice milling wheat and best grades of Minnesota flour.

Having had a large experience in the milling business, we feel confident that we can fill all orders satisfactorily Careful attention given to consignments.

A. B. TAYLOR,

Wholesale Grain Dealer.

Milling orders for round or car lots of hard or soft Spring Wheat promptly filled. Careful attention given to consignments Security Bank Building,

MINNEAPOLIS, MINN.

J. J. BLACKMAN & CO.,

Commission Merchants.

FLOUR EXCLUSIVELY.

37 Water Street, New York.

J. J. BLACKMAN, J. S. BLACKMAN.

M. BERNATZ,

Flour, Grain and Feed

COMMISSION MERCHANT.

Strong Minnesota Bakers' flour a specialty. Liberal advances made on consignments. Correspondence solicited. Reference—R. Patrick & Co., Bankers, Pittsburgh, Pa.

339 Liberty Street, PITTSBURGH, PA.

EXPORT FLOUR TRADE!

Chas. J. HELLIWELL & CO.

51, Chamber of Commerce Building,

MILWAUKEE, - - WISCONSIN,

(ESTABLISHED 1860.)

Mr. C. J. Helliwell, after a visit of several months to this country, has now returned to Liverpool, England, still better fitted than formerly to serve American Millers. The firm at Milwaukee will be pleased to receive samples and offers from millers, and to furnish any information in their power.

J. D. EDGE,

Millwright and Draughtsman,

Dealer in Millfurnishings, Etc.

Estimates cheerfully given on building new mills and repairing old ones. **Minneapolis, Minn.**

A BARGAIN!

The following machinery will be sold at a bargain: One 25-inch right hand turbine water wheel; 1 30-inch right hand turbine water wheel; 1 30-inch left hand turbine water wheel; 1 36-inch right hand turbine water wheel; 1 40-inch left hand turbine water wheel; 3 No. 5 Smith purifiers. This machinery is in excellent order and will be sold at a sacrifice. Address,

PRAY MFG. CO.,

Minneapolis, Minn.

RICHARD & BUTLER,

FLOUR MILL MACHINERY.

IRON FRAME FRENCH BUHR MILLS

20" DIAMETER.

For Low Grade or Middlings,..... $150

For Feed,..... 125

Engines, Boilers, Saw Mills, Pumps, Fittings, Shafting, Pulleys, etc. A full line of wood-working machinery, new and second hand.

Cor. Missouri and Georgia Streets,

INDIANAPOLIS, IND.

Send for Catalogue and Prices.

ATLAS ENGINE WORKS

INDIANAPOLIS, IND., U. S. A.

MANUFACTURERS OF

STEAM ENGINES AND BOILERS.

CARRY ENGINES and BOILERS IN STOCK for IMMEDIATE DELIVERY

All inquiries for Atlas Engines in the Northwest should be addressed to **SHATTO & DENNIS** Minneapolis, Minn. who are sole agents for MINNESOTA, DAKOTA, and TERRITORIES WEST, and carry a full line of Atlas Engines and Boilers. Also a full line of SAW MILLS for immediate delivery. All kind of Machinery, Pulleys, Shafting, Belting, &c. Send for circulars.

SHATTO & DENNIS, Minneapolis, Minnesota.

VICTORY! VICTORY! VICTORY!

No more Bulldozing. No more Intimidation.

No more compelling Millers to buy the Purifier they do not want.

The long pending and expensive suit for infringement of the Smith Co. against us, has been decided by the U. S. Court in our favor. The court in rendering the decision said,

"Case is as far beyond Smith, as Smith was beyond Stoll.

There is no infringement on the part of the Case Machine, and the decree of this court is that the case be dismissed at complainant's cost."

"Thrice armed is he who hath his quarrels just."

Preparations are now in progress for a much larger out-put of our purifiers. Thousands of millers, as our correspondence shows, have wanted our Purifier but feared to buy it. In every township in every state, a Smith agent was at hand to threaten and brow-beat the miller out of his choice of a purifier. There will be no more of this.

The Smith Co. "bit off more than they could chew."

"Case is as far beyond Smith," etc., etc. Good enough!

We propose now to reduce the price of our purifier, and prepare for the enlarged demand that awaits it, and shall continue, also, with renewed effort, the manufacture of our Gradual Reduction Machines, which, combined with our Purifier, give the miller the most complete line of modern mill machinery made by any one company.

Soliciting the patronage of the milling community, we remain,

CASE MANUFACTURING COMPANY, COLUMBUS, OHIO.

Millers visiting Chicago are requested to call on WM. E. CATLIN & CO., 57 South Canal Street, our Agents there.

AN ESTABLISHED SUCCESS.

PRINZ PATENT DUST COLLECTOR

Prinz Patents,
Nos.
272,473
272,474

Prinz Pat. Improved Dust Catcher.

Prinz Pat. Improved Dust Collector with Fan Attachment.

CONSOLIDATED
Licensees Patents,
Nos.
63,325
125,518
149,434
171,973
207,585
211,033
228,023
231,376
235,197
239,755
248,984
250,813
251,120
251,121
258,875
258,876
258,878
259,872
259,873

One Thousand Machines in Successful Operation. Machines in steady operation for over two years. Selling at the rate of 200 a month. ***FULLY GUARANTEED.*** *Manufactured exclusively under the* ***PRINZ PATENTS.*** *Also licensed under all patents now or hereafter owned and controlled by the combined licensees, Geo. T. Smith Middlings Purifier Co. of Jackson, Mich., Kirk & Fender, Minneapolis, Minn., and Sam'l L. Bean of Washington, D. C.* **See Special Notice.** *License under all patents furnished purchasers. Send for circulars and other references. All correspondence promptly answered. You will save time, money and labor by using this machine.* **Every Miller Should Have It.** *Remember it is the* ***BEST.*** *Note testimonials, samples of hundreds received.*

MILWAUKEE DUST COLLECTOR MFG. CO., Milwaukee, Wisconsin, U. S. A.

MFG AND TRADE.

Yeo & Clark, La Crosse, Wis., lately ordered four pairs of Allis-Gray rolls.

Singleton Bros., North Branch Station, have ordered a La Du-King Cockle mill.

Hinman & Ward, Battle Creek, Mich., have ordered a La Du-King cockle mill and grader.

Speer & Hulbard, Sabetha, Kas., are putting in a middlings mill bought of the Gt. Western Mfg. Co.

Havens & Co., of Waldron, Mo., have ordered a Smith purifier of the Gt. Western Mfg. Co.

Edw. P. Allis & Co. have received an order for Allis-Gray rolls from W. S. Hall, Steel City, Neb.

The Case Mfg. Co., of Columbus, O., have the order of John Brinks, Jr., for a line of new machinery.

J. T. McKenzie, Louisville, Ky., has ordered of the Jno. T. Noye Mfg. Co. a single Stevens roller mill.

Weatherford, Texas, is to have a good custom mill. The Richmond City Mill Works furnish the machinery.

W. L. Challis, of Woodlawn, Kas., has ordered a Becker brush and Eureka packer of the Gt. Western Mfg. Co.

Page, Norton & Co., North Topeka, Kas., are improving their mill, getting machinery of the Gt. Western Mfg. Co.

W. E. Davis & Co., Iola, Kas., ordered sheaves and wire rope of the Gt. Western Mfg. Co., of Leavenworth.

Armstrong & Sons, of Fayette, Mo., will start up their mill in a short time on the Case system of gradual reduction.

The La Du-King Mfg. Co. have shipped W. F. Meader & Co., Minneapolis, a No. 1 cockle mill and seed separator.

The Case Mfg. Co. have furnished C. Carter & Son, Eaton, Ind., 1 9x18 4-roller Bismarck mill with patent automatic feed.

D. L. Wing & Co., St. Louis, Mo., have ordered for their mill at Litchfield, Ill., a La Du-King grader of 10,000 bus. capacity.

Vreeland & Sheldon, Beloit Kas., are adding two purifiers and a centrifugal reel to their mill, ordered from the Gt. Western Mfg. Co.

Riestand & Cowman, Hillsboro, O., have contracted with E. P. Allis & Co. for the outfit of roller mills and machinery for their new mill.

The Case Mfg. Co., Columbus, O., have the order of A. K. Griffith, Orrville, for 2 pairs of smooth rolls with patent automatic feed.

The Richmond City Mill Works have within the past two weeks, received orders for the machinery for five complete mills in the state of Texas.

Turner & Reynolds, Staunton, Mich., are improving their mill, and have recently ordered an Allis-Gray roller mill from E. P. Allis & Co.

Edward P. Allis & Co., of Milwaukee, recently received an order from Silas Barkley, Hulmeville, Pa., for 7 pairs of the Allis-Gray rolls.

J. W. Gift & Co., of Peoria, Ill., are putting in another pair of smooth rolls with patent automatic feed, from the Case Mfg. Co., Columbus, O.

The Case Mfg. Co., have the order of Barrett & Son, of Spring Valley, O., for four of their patent automatic feeds to go on rolls of other manufacture.

The Case Mfg. Co., have shipped Brandt & Manning, of Mt. Joy, Pa., one 9x18 double Bismarck mill with patent automatic feed for bran and tailings.

A. T. Rodgers, Beloit, Kas., has placed his order for a complete elevator outfit, including a 20 horse-power engine, with the Gt. Western Mfg. Co., of Leavenworth.

The Odessa Milling Co., of Odessa, Mo., are overhauling their mill, having lodged an order for machinery with the Gt. Western Mfg. Co., of Leavenworth.

B. F. Gump, of Chicago, has directed the Noye Mfg. Co., of Buffalo, to ship A. Fredenhagen, of St. Charles, Ill., a single Stevens roller mill for cleaning bran.

The La Croix Middlings Purifier Co., of Indianapolis, are remodeling the mill of Long & Co., Russellville, Ky., and are putting in a full line of Allis-Gray rolls.

Mr. W. H. Burgess, of Clarksville, Tenn., has recently ordered a four reel Richmond improved bolting chest, manufactured by the Richmond City Mill Works.

E. W. Pride, agent at Neenah, Wis., has sent the J. T. Noye Mfg. Co. an order from S. P. K. Seurs & Son, of Beaver Dam, Wis., for a single Stevens roller mill.

A. S. Davenport & Co., of Pittston, Pa., have determined to put in a Round's sectional roller mill with Stevens corrugations. The Noye Mfg. Co. will fill the order.

H. Berkholtz, of Rock Rapids, Ia., is putting in a Round's sectional roller mill with Stevens corrugations, to be furnished by the J. T. Noye Mfg. Co., of Buffalo.

Murkley & Co., of Hutchinson, Kas., are fitting up a mill for custom work. The machinery will be furnished by the Richmond City Mill Works, of Richmond, Ind.

Chas. Heuber, the milling expert of St. Louis, has lodged an order with the J. T. Noye Mfg. Co. for 5 pairs of Stevens rolls for Geissing & Sons, of Farmington, Mo.

A Round's sectional roller mill with the Stevens corrugations will soon be placed in the mill of Guthrie Bros. & Chase, at Milford, Ia., by the Noye Mfg. Co., of Buffalo. N. Y.

The machinery for a 100 barrel stone and roller mill, to be built by Winkler Bros., of Winkler's Mills, Neb., is being furnished by the Gt. Western Mfg. Co., of Leavenworth.

The Richmond City Mill Works have placed one of Griscom & Co. & McFeely's combined facing, cracking and furrow dressing machines in J. M. Veach & Co's., mill, at Adairsville, Ga.

C. H. Guenther & Sons, San Antonio, Tex., are remodeling their mill, adding rolls, purifiers, and Martin's centrifugal reels, which are furnished by the Gt. Western Mfg. Co., of Leavenworth.

H. Wambold, Eagle, Wis., has directed the Noye Mfg. Co., of Buffalo, to ship him two Round's sectional roller mills in separate frames and one single mill, all with Stevens corrugations.

Horton & Gerkins, Parker, D. T., have passed in their order to the Jno. T. Noye Mfg. Co., of Buffalo, N. Y., for a four break Round's sectional roller mill with the Stevens corrugations.

Bard Bros., Milford, Kas., have placed their order with the Gt. Western Mfg. Co., of Leavenworth, Kas., for a four run buhr mill complete, the machinery including one of their 14x20 engines.

The La Du-King Mfg. Co., Rochester, Minn., have shipped J. H. Feather, Berrien Springs, Mich., and Charles McCracken, Buchanan, Mich., each a No. 1 King cockle mill and seed separator.

The Garden City Mill Furnishing Co., of Chicago, recently placed orders with E. P. Allis & Co. for a Gray roll for J. M. Hadley, Desota, Kas.; also a set for Henry Colstein, Roselle, Ill.

The Case Mfg. Co., of Columbus, O., have been awarded the contract of R. Tuttle & Co., Columbia City, Ind., for a line of breaks, rolls, purifiers, centrifugals, scalpers, etc., for a gradual reduction mill.

The Case Mfg. Co. have been awarded the contract of Fisk & Silliman, Ashtabula, O., for a full line of breaks, rolls, purifiers, scalping reels, centrifugal reels, etc., for a full gradual reduction mill.

West, Allison & Co., of Hutchinson, Kas., are increasing the capacity of their mill by the addition of two sets of double rolls, scalpers, bolting chests, etc. The Richmond City Mill Works has the contract.

The Case Mfg. Co., have been awarded the contract of White & Feather, of Clark's Mills, Pa , for a line of breaks, rolls, purifiers, centrifugals, etc., for a full gradual reduction mill on the Case system.

Commins & Allen, Akron, O., have taken out the last run of stone in their mill and substituted therefor a double 9x18 porcelain roller mill in Gray frame, furnished by Messrs. E. P. Allis & Co., Milwaukee.

The Atlas Milling Co., of Buffalo, N. Y., are giving their mill a general overhauling under the supervision of Ed. Brown, Jr. The John T. Noye Mfg. Co. furnish ten pairs of Stevens rolls for the purpose.

Again Pyne, (W. T.) of Louisville, Ky., is heard from. This time he places an order with the Jno. T. Noye Mfg. Co., of Buffalo, N. Y., for a double Stevens roller mill, for J. T. McKenzie, of Louisville, Ky.

Wood, Morrell & Co., Johnstown, Pa., are about to change to rolls, and have sent the John T. Noye Mfg. Co., of Buffalo, an order for 15 pairs of the celebrated Stevens rolls mounted in the improved frames.

Sackett, Ramsom & Co., Watkins, N. Y., are about to put in a Round's sectional roller mill with Stevens corrugations; and also a double mill for germ and middlings. The Noye Mfg. Co. will fill the order.

Jos. Wagner & Co., of San Francisco, Cal., the largest millfurnishing establishment on the Pacific coast, has ordered of the Noye Mfg. Co., two Rounds sectional roller mills, both with the Stevens corrugation.

L. V. Rathbun, general agent of the Stevens roller mills, has placed an order with the Noye Mfg. Co., of Buffalo, for another Rounds sectional roller mill and two single mills, all with Stevens corrugations.

Ed. Zahn, Burlington, Wis., visited Milwaukee recently, and after a careful examination placed his order with Messrs. Allis & Co. for one of their new 4-break reduction machines and 4 pairs of Allis-Gray rolls.

The millers generally throughout the country are adopting the Prinz dust collector and abolishing the old fashioned dust room. This keeps the Milwaukee Dust Collector Mfg. Co.'s shops on a full run all the time.

The Case Mfg. Co., Columbus, O., have again heard from W. H. Childs, Abilene, Kas. He wants one more pair smooth rolls with patent automatic feed, and has instructed the Case Co. to ship the same at once.

The Spaulding Elevator Construction Co. of Eau Claire, Wis., is full of business. The agents of the company have a number of elevators in course of construction and new contracts are likely to be entered into soon.

Charles Huber, the St. Louis Hungarian milling engineer has secured an order from Moening & Wettin, of Quincy, Ill., for three double Stevens roller mills to be furnished by the John T. Noye Mfg. Co., of Buffalo, N. Y.

Van Pelt & Ellis, of Port William, O., have contracted with the Richmond City Mill Works for one of their improved bolting chests and considerable additional machinery, and will at once put their mill in good shape.

Wm. Bell & Co., Millbrig, Ill., and T. Cottingham, of Benton, Wis., have contracted with the Iowa Iron Works Mill Building Co., of Dubuque, for remodeling their mills. They will each use a full line of Allis-Gray rolls.

The Case Mfg. Co., Columbus, O., have taken the contract of Dennis & Slough, Westerville, O., for a full line of breaks, rolls, purifiers, scalping reels, centrifugal reels, etc., for a gradual reduction mill on the Case system.

Geo. W. Nicewanner, Piqua, O., after using some of the Case rolls for a short time, has placed his order with the Case Mfg. Co., Columbus, O., for a full line of breaks, rolls, purifiers, etc., for a gradual reduction mill on the Case system.

Griscom & Co. & McFeely, of Philadelphia, have filled orders for diamonds for millstone dressing from G. H. Dulle & Son, Jefferson City, Mo.; Daily, Russell & Williams, of Nevada, O.; French Bros, Plainfield, N. J.; Midland Flouring Mill Co., of Midland City, Mich.

F. S. Nichols, at Newark, N. Y., has determined to yield to the roller boom, and has filed an order with the John T. Noye Mfg. Co., of Buffalo, for a Round's sectional roller mill and a double detached mill with the necessary machinery to alter his mill to the roller system.

The Milwaukee Dust Collector Mfg. Co., are receiving orders for their Prinz dust collectors from all the leading millfurnishers among whom are, especially, the Jno. T. Noye Mfg. Co., E. P. Allis & Co., Todds & Stanley Mill Furnishing Co., The Nordyke & Marmon Co., etc.

The Meriden Milling Co., of Meriden, Kas., having completed their organization, will at once erect a mill, intending by the time the new harvest is gathered to be prepared to turn out as good flour as is made in the state. The machinery will all be furnished by the Richmond City Mill Works.

Murdaugh & Co., of St. Clairsville, O.; G. W. Woodruff, of Columbus, Ga.; J. B. Holderman, Clinton, Ill.; D. H. Coswell & Co., of Nashville, Tenn., J. J. Balcomb, of Decatur, Mich., are among those ordering diamonds of Griscom & Co., & McFeely for their diamond millstone dressers.

H. Lanone & Co., Concordia, Kas., have placed their order for three pair of buhrs, 50 inch water wheel, a six reel chest, a 3 reel chest, 3 purifiers, centrifugal reel, Victor brush, Barnard & Leas receiving separator, packers, and 6 pairs of rolls, with the Gt. Western Mfg. Co., of Leavenworth, Kas.

The following have ordered diamonds of Griscom & Co. & McFeely, of Philadelphia, for millstone dressing: Woodbury & Son, Marshalltown, Ia.; V. M. Ayres, Arkansas City, Kas.; W. A. White, Clintondale, Pa.; Shick & Wamsbee, Port Clinton, Pa.; and G. E. Leak, Mitchell, Tenn.

Griscom & Co. & McFeely have furnished diamonds for millstone dressing to the following: Channon & Wilson, Wyandotte, Kas.; Comstock, Clark & Co., Hudson, Wis.; Eufaula mill, Eufaula, Ala.; H. R. Munkelt, Salem, Ind.; R. M. Butler, Vineland, N. J.; Shaner, Knott & Co., Beaver Falls, Pa.

W. F. Shook, formerly head miller for the mill of Commins & Allen, at Akron, O., has entered into partnership with the National Mill and Elevator Co., at Parsons, Kas., and is remodeling their mill to the roller system. Messrs. Allis & Co., of Milwaukee, are furnishing the outfit of rolls and machinery.

Brown Brothers, of Columbus, O., have came to the conclusion that they will have to change their mill to the roller system or else close it, and preferring the former, they have placed their order with the Case Mfg. Co., of their city, for a full line of breaks, rolls, purifiers, centrifugals, etc., for a gradual reduction mill.

The Case Mfg. Co., of Columbus, O., write us that they have lately made a large addition to their capital stock and have commenced the erection of two new shops, which will greatly increase their present capacity. They report trade as very brisk with them, and say they have no trouble to place orders for their full system in localities where they already have mills running.

The mill of David P. Hamilton, at White Pigeon, Mich., will soon undergo a transformation from a stone to a roller mill at the hands of the Jno. T. Noye Mfg. Co., of Buffalo. In the list of machinery to be used will be 6 double and 1 single Stevens roller mills, 2 Martin centrifugals, Richmond bran dusters and brush machines, 2 flour packers, 3 Smith purifiers, Barnard & Leas separator, and scalpers and bolting apparatus to constitute a first class mill.

W. & N. Thayer & Co., of Westerville, O., have lately received orders as follows: From J. H. Hartman, Harrisburgh, Pa., through J. Seibert & Son., for a No. 2 middlings purifier; Batson & Miller, Fetterman, W. Va., a pneumatic middlings purifier, including remodeling bolting chest; E. J. Freeland, Burton, W. Va., a large purifier and remodeling bolting chest; Bettis, Sabin & Dodge, Randolph, O., a three-reel bolting chest and cleaning machinery, including remodeling of mill, adopting the Thayer system; F. N. Freeland, Netz, W. Va., purifier, scalping reel, and other machinery.

Griscom & Co. & McFeely, of Philadelphia, pride themselves on the fact, that parties who have had their millstone dressers in use three, four or five years, continue to use them regularly as is shown by their orders for diamonds: Barney, Demos & Co., of Roscoe, O.; Marshall, Kennedy & Co., Pittsburgh, Pa.; J. B. Holderman, Clinton, Ill.; J. H. Seaver & Co., Ithaca, Mich.; H. & J. Kreider, Annville, Pa.; G. H. & A. T. Hotaling, Baldwinsville, N. Y.; D. Hamil, Newton, Kas.; C. P. Cleopman & Co., Pittsfield, Ill.; Johnson, Wolf & Co., Jefferson, Wis.; Comstock, Clark & Co., Hudson, Wis.; Henry Rodee, Ogdensburg, N. Y.; D. & A. Lukenbach, Bethlehem, Pa., are a few of this class.

Established 1885.

GENUINE DUTCH ANCHOR

BOLTING CLOTH

Every Yard Warranted.

Imported direct by LATIMER & CO.,
33 N. Front Street, PHILADELPHIA, PA
Send for samples and prices.

Eureka Coil Spring

Warranted to Prevent Backlash.

OVER 8000 IN USE.

Equilibrium Driving Fulley Prevents Side-pull on Mill Spindle.

JOHN A. HAFNER,
PITTSBURGH, PA.

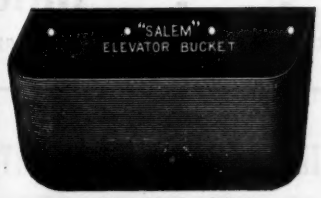
The "Salem" Elevator Bucket.

—AWARDED—

FIRST PREMIUM

AT THE

Millers' International Exhibition



SPECIAL FEATURES.

SEAMLESS ROUNDED CORNERS.

No seams to burst; no corners to catch or clog; "takes" easily and delivers promptly—not liable to carry down the back leg.

Shovel-Edge, Curved Heel, Smooth Finish

and freedom from projecting seams, rivet heads, bands, etc., make it run easy, save power, reduce strain or wear and tear of belting, etc.

IT IS STRONG AND DURABLE,

Will outwear three or four hand-made buckets.

It meets the advanced ideas of the times successfully, and is nearer perfection in every respect than any other bucket made.

Leading millwrights recommend it, and the best informed millers approve and adopt it.

W. J. CLARK & CO., Sole Mfrs.
SALEM, OHIO.
New York Office and Salesroom, No. 9 Cliff St.

DEAL'S CORUNDUM POLISHER

A tool for Cutting, Leveling and Polishing the Furrows and Face of millstones.

Received the Highest and only Award given for Polishers at the Millers' Exposition, Cincinnati, June, 1880.

For facing down high places on the buhr, this tool has no equal, and can be done much better and in one-sixth the time than with the mill pick. It is much larger, cuts better, can be used on either face or furrow; can be used until the corundum is entirely worn out on one side and then turned on the other side Has over four times the amount of corundum, and when the corundum is worn out can be replaced in the handle at a small cost. Sent by express, $3.50 Satisfaction guaranteed or money refunded. Address

HORACE DEAL, Bucyrus, O.

HEAD × LININGS

—AND—

Coiled Barrel Hoops.

OUR CELEBRATED

PATENT ROUND EDGE BENT BARREL HEAD LININGS

are straight grained from end to end. Rounded on their upper edge and crimped or bent ready to nail on barrel. They will not mould as the air circulates freely through the square bundles of 250 in which they are packed. We can furnish them any desired lengths from 12 to 72 inches, and as cheap as any *good* Head Lining can be sold. Can fill orders at sight.

REED & SILL COOPERAGE CO.,

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"PHOTO ENGRAVING AND WOOD ENGRAVING."

SEND PHOTOGRAPH OR SKETCHES FOR FIGURES.

We will engage to do any kind of WOOD ENGRAVING, such as Cuts of Agricultural Implements, Machinery of all kinds, Buildings, Landscapes, Portraits, Labels (in Black and in Colors), Book Illustrations, Poster Work, Newspaper Headings, Cards, Monograms, etc.

SEND STAMP FOR NEW SPECIMEN SHEET.

H. BODMER'S

BOLTING CLOTHS!

Acknowledged to be the HEAVIEST, BEST AND MOST REGULAR MAKE.

The first Silk Bolting Cloths ever manufactured and imported into this Country.

DIRECTLY IMPORTED FOR

P. S. CRANDALL,	Troy, New York.
GARDEN CITY MILL FURNISHING CO.,	Chicago, Illinois.
GEORGE R. GALE,	Cleveland, Ohio.
JOHNSON & JARRETT.	Des Moines, Iowa.
CONSOLIDATED PURIFIER CO.,	Toronto, Ont.
G. KRESS & CO.,	New York.
P. A. & S. SMALL,	York, Pennsylvania
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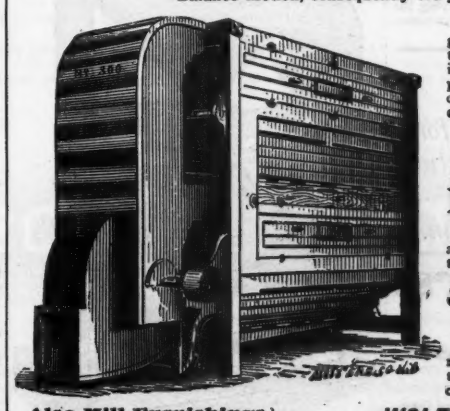
WOLF & HAMAKER'S

LATEST IMPROVED MIDDLINGS PURIFIER.

The only Machine with Two Sieves, for Fine and Coarse Middlings, The Only Machine with Balance Motion, consequently No Jarring or Shaking.



Adapted to all styles of milling, high or low grinding, as fine or coarse middlings can be treated separate on one machine. Economy in space, as the machine is a double one. A perfect cloth cleaning device. No brushing or wearing of cloth. Licensed under all conflicting patents.

WOLF & HAMAKER'S

LATEST IMPROVED

DUST × CATCHER.

A success beyond a doubt. Parties wanting any machine for above purpose would do well to write for prices and terms.

Swiss Het Anker Bolting Cloth

The Best in the Market.

Large stock always on hand. We buy direct from manufacturers, and would be pleased to have parties write us for prices and discounts.

Also Mill Furnishings of Every Description.

WOLF & HAMAKER, Allentown, Pa.

Straub's Scientific

Grain and Middlings Mill

12, 20 and 30 inch Millstones for farm and merchant work. Also manufacturers of Straub's Horizontal Flour Sack Packer and Mixer, and Black Diamond Mill Picks. Send for our Circular and Price List.

A. W. STRAUB & CO.,
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Established in 1857.

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☞ Prompt attention given to all business entrusted to their care.

MERCER'S RELIABLE TURBINE WATER WHEEL.

This wheel is acknowledged one of the best on the market. Has valuable improvements in the construction, which are commanding the attention of buyers.

Send for catalogue and price list.

T. B. MERCER,
WEST CHESTER,
Chester Co., Pa.

Anti Friction,

ROLLER DETACHABLE

CHAIN BELTING,

FOR

ELEVATORS, CONVEYORS, CAR RIERS, ETC., ETC.

AND FOR DRIVING PURPOSES.

Recommended as a superior chain belting having greater wearing surface, and in connection with the Friction Roller, longer lived, than any similar belting.

Manufactured and sold by the

LECHNER MFG. CO.,
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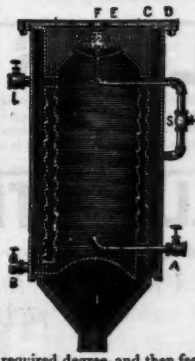
C. T. HANNA'S

WHEAT HEATER

—AND—

Wheat Heater and Steamer.



Patented Sept. 27, 1870. Re-issued Aug. 31, 1880. Re-issued May 17, 1881. Patented Feb. 28, 1882.

Millers please examine the 1st and 9th claims and then ask yourselves or attorneys if all other machines used for the *same purpose are not direct infringements.*

FIRST CLAIM.—The Improved Milling *Process* or *processes of preparing grain for grinding and feeding* it to a grinding mill, which consists in passing it by its own gravity *over or in contact with a heated surface,* thus drying and heating it to the required degree, and then feeding it to the *buhrs or rolls while still hot,* substantially as and for the purpose hereinbefore set forth.

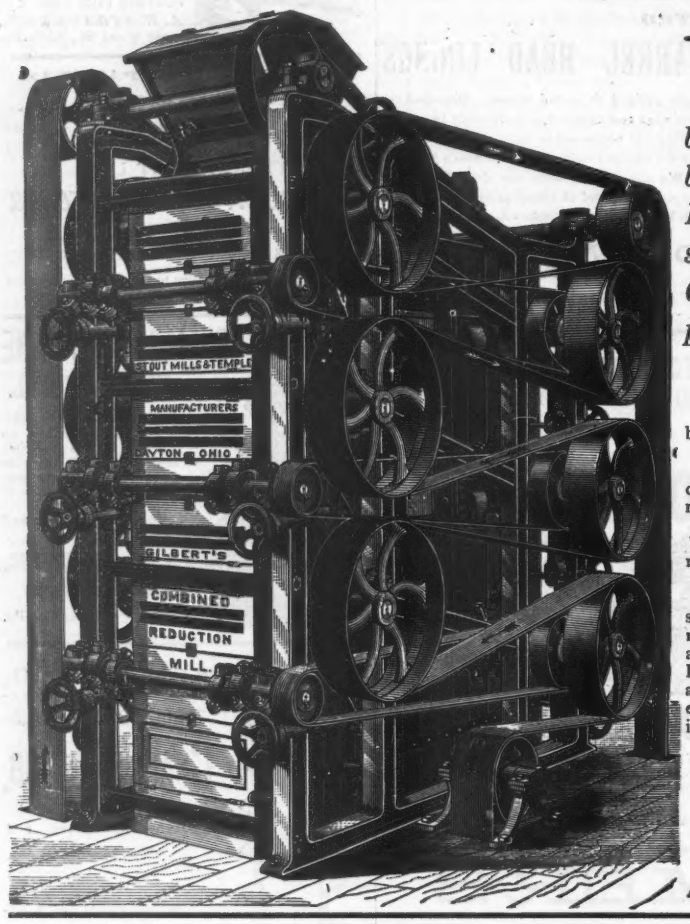
NINTH CLAIM.—An apparatus for use as specified, which when suspended vertically is adapted to receive wain, and allow passage and discharge of same by its own gravity, and is provided with a chamber or chambers for receiving steam for the purpose of heating the grain as it passes in contact with the heated walls, as set forth. Address

C. T. HANNA,
General Mill Furnisher, Contractor & Builder,
39 Water Street PITTSBURGH, PA.

THE

GILBERT COMBINATION REDUCTION ROLLER MILL

(PATENTED AUG. 22, 1882.)



A Complete Success

Six breaks, five scalpers and elevators, with aspirating after each break, combined in strong, neat, iron frame. The whole mill is driven by two endless belts, requiring but two driving pulleys. A Twelve Roller Mill, making six reductions, as above described, occupies floor space of only 5x8 feet; extreme height to top of feed hopper, 9 feet. Complete arrangements for leveling and adjusting the rolls. Every part accessible, and as easily operated as an ordinary four roller mill.

What We Guarantee:

FIRST. To make a larger percentage of middlings and less break flour than by any other process, because we do away with elevating, conveying and spouting between breaks.

SECOND. To scalp cleaner and better than can be done by revolving reels.

THIRD. Our system of elevating from one pair of break rolls to the other is far preferable, because we elevate but nine inches, and while elevating the scalping is done, which dispenses with scalping reels, elevators and driving machinery for same, thus greatly simplifying machinery and saving power.

FOURTH. We obtain a greater amount of cloth surface in the same space.

FIFTH. The flour and middlings are removed before we apply our suction, consequently we do not remove any good stock.

SIXTH. The mill runs smooth and noiseless.

SEVENTH. The tension of driving belts are regulated by tightening pulleys, and the mill can be stopped and started at pleasure, without interfering with any other portion of the machinery of the mill. These mills meet a want no other mills can meet, as they are complete in all their appointments, and will do all that any roller mill can do, and it occupies a very small space. They are adapted to both large and small mills. The space saved is worth the price of the mills. We need not enlarge upon the advantages of the Gilbert Combination Mills. We guarantee all we say in reference to them. References and letters of introduction to parties using these mills will be given to any who wish to see them in operation. Circulars with price list will be sent on application. Address

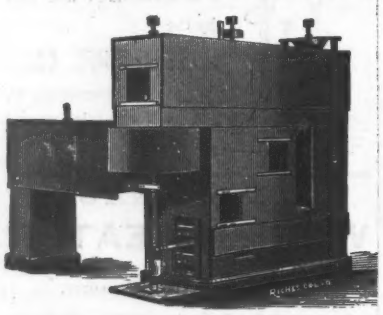
Stout, Mills & Temple,

DAYTON, - - - - OHIO.

WM. & J. G. GREEY, Toronto, Ontario, Sole Manufacturers and Agents for the Provinces of Canada.

45 lbs. Flour. **THAYER'S** **60 lbs. Wheat.**

Pneumatic Middlings Purifier!



Thayer's Common Sense Three Reel Bolt

ACKNOWLEDGED TO BE THE

GRANDEST SUCCESS OF THE AGE.

Why? Because the principles envolved are simple and practical, and adapted to custom mills as well as merchants, and brings (when our system is adopted) small mills in competition with merchant mills, and places them on an equal footing as to quantity and quality produced. Bolting cloths arranged to our system made to order and on liberal terms. For further information regarding our Bolt and Purifier, address

W. & N. THAYER & CO.,

WESTERVILLE, Franklin Co., O., U. S. A.

A WORD TO

MILLERS AND MILLWRIGHTS.

If you contemplate the purchase of a first-class Purifier, one that is meeting with unbounded success, we invite your attention to a view of the many advantages that can be obtained in the purchase of a Pneumatic Middlings Purifier:

1. It costs less than any other first-class purifier.
2. It takes less power to run it than any other purifier manufactured.
3. It is *no rattler*, being noiseless when in operation.
4. It agitates the middlings, making a separation of the coarse from the fine, by air alone, *purifying them separately on the same machine*, thereby saving granulation.
5. It embodies two Purifiers in one.
6. It has greater capacity than any other purifier made, according to size and space occupied.
7. It is the only purifier where the operator has perfect control of all the air currents by the use of valves.
8. It is the most simply constructed purifier in existence, avoiding all complications.
9. It has no conveyors or endless chains to get out of r air.
10. It has the best feed in the world, and is always ready when the miller is.

W. & N. THAYER & Co.,
Westerville, Franklin Co., Ohio, U. S. A.

MILLERS IN WANT

Of a Middlings Run, Corn or Feed Stone, should write to **CHAS. KAESTNER & CO.**, *303 & 305 Canal Street, Chicago*, for description and price list of their Improved Portable Mill. Four thousand of them have been sold and they are in use in every state and territory and most foreign countries, giving the best satisfaction in all cases. Buy the best. It is always the cheapest. ☞Mention the Northwestern Miller when writing.

MILL WANTED---BONUS.

The village of Montevideo offers a bonus of $4,000 for a flouring mill. A fortune for the right man. For full particulars address, **VILLAGE COUNCIL, Montevideo, Chippewa Co., Minn.**

Circular Grain Elevators.

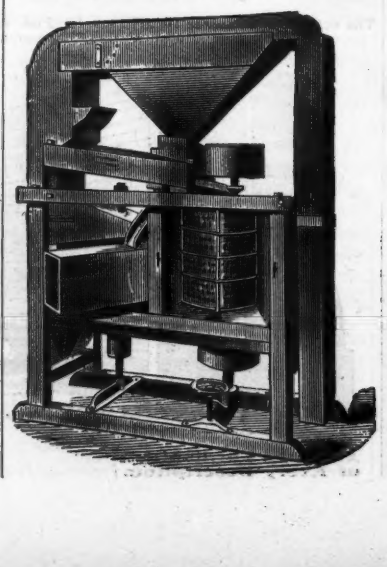
L. C. BARNETT, 36 Washington Ave. S., Room 10,

Minneapolis, - - - - - Minnesota.

BUILDER for all the territory west of the Mississippi.

More than fifty in successful operation in the northwest. We can refer intending builders to any or all of them.
The most storage for the least money, and the handiest to operate.

Kreider, Campbell & Co.,



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MILLWRIGHTS, MACHINISTS

Steam Engine Builders,

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Mills and Mill Furnishings of all kinds.

MANUFACTURERS OF

B. T. TRIMMER'S IMPROVED

Grain Scouring, Rubbing and Separating Machine

Combined. This is the best machine in the market for cleaning grain. It is well known to the best millers. It is used in the best mills in the country. It is operated on the only correct principle for thoroughly cleaning grain; that is by rubbing wheat against wheat. It has

MANY POINTS OF SUPERIORITY

over all others. If you want only the best, send for full descriptive circular.